

## SCENARIO 1: Resuscitation of an Adult in Cardiac and Respiratory Arrest During an Earthquake

### What is learning outcome?

#### HARD skills:

Participants receiving this training:

1. Recognizes cardiac and respiratory arrest.
2. Creates a safe environment for intervention.
3. Applies the steps of Basic Life Support (BLS) in the correct order (ABC approach).
4. Performs chest compressions at the correct rate and depth.
5. Uses the Automated External Defibrillator (AED) correctly.

#### SOFT skill:

Participants receiving this training:

1. Remains calm and in control during emergencies.
2. Acts quickly and effectively in decision-making processes.
3. Communicates clearly and gives guiding instructions to people around.

#### Description of the situation: (For all scenarios, description of situation will be different )

Near the edge of a collapsed building, the user identifies an adult male lying motionless on the ground. His body is partially covered in dust and debris, indicating possible trauma. As the user approaches, it becomes evident that the individual is unresponsive. There is no visible chest movement, no audible breath sounds, and no signs of circulation. A carotid pulse check confirms cardiac arrest.

This is a critical life-threatening emergency. The participant must first ensure the scene is safe and then promptly begin a basic life support (BLS) protocol. This includes assessing responsiveness, opening the airway, checking for breathing and pulse, and immediately initiating CPR.

The simulation is designed to respond dynamically to the user's actions:

✓ **Correct and timely interventions** (e.g., high-quality CPR, use of AED) may lead to the return of spontaneous circulation and breathing.

✗ **Incorrect, delayed, or omitted actions** will cause the patient's condition to deteriorate, potentially leading to irreversible shock or death.

#### Description of the environment: (For all scenarios, description of the environment will be same)

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### Interaction - what should the participant do:

#### Initial safety check:

The participant moves through the debris-filled area.

- "Let's check the surroundings. We need to find a safe spot."

**Check the surroundings: find a safe place**

**Identifying the injured person:**

A scene shows a conscious adult lying on the ground

**There is an injured and unconscious person here! I will call 112**

- "There is an injured person here! He looks unconscious. We need to intervene immediately."
- "Alright, I'll call 112 and request emergency assistance."

**Situation assessment:**

- The participant kneels next to the individual, touches his/her shoulder, and says, "Can you hear me?".

**Can you hear me?"**

✓ **System feedback:** "No response from the patient."

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**Begin chest compressions**

✓

**Check breathing**

**Step 1: Breathing check:**

Participant

- Puts fingers in the patient's mouth to check whether there are foreign objects in the mouth of the individual and remove them.
- Holds the individual's forehead and tilts his/her head back by lifting the chin point with his/her fingers.
- Checks whether he/she hears breathing sound by putting his/her ear close to the mouth and nose of the individual.
- Attempts to feel the breath coming from the individual's mouth or nose on his/her cheeks.

**No breathing**

- Gives vocal feedback as "not breathing."
- Activates the speakerphone or "hands-free" feature of the phone so that he/she can stay with

the individual and start CPR while talking to the attendant.



**Check pulse**



**Give direct mouth-to-mouth breathing**

**Step 2: Circulation check:**

Participant

- Places the fingers on the side of the neck, right next to the larynx (Adam's apple).

**No pulse**

- Gives vocal feedback as “no pulse”.

**Chest Compression, Respiration and Automated External Defibrillator (AED) Application**

- The participant is expected to perform the following steps:



**30 chest compression+2 breathing**



**10 chest compression+5 breathing**

**Step 3: Chest compression:**

Participant

- Lays the individual on their back on the hard floor
- Centers the individual's breastbone (sternum) and determines the midpoint of the sternum, places the hand on the lower half of the sternum.
- Holds the hand exactly on the sternum.
- Keeps the hands steady, the elbows and shoulders straight and perpendicular to the patient's body.
- While the participant's arms are in a perpendicular position and tense to the individual's chest, pushes the sternum down (the compression depth is 5-6 cm) by applying body weight and releases the ribcage without lifting their hands.

- Performs 30 heart massages, then gives 2 breaths.
- The chest compression rate is 100-120 compressions per minute, the compression depth is 5-6 cm.

#### **Step 4: Artificial respiration:**

Participant

- The participant places one hand on the individual's forehead.
- Place fingers of the other hand on the individual's chin.
- The head is pushed back, and the chin is lifted. (a head-chin position).
- Place the pocket mask with the narrow end at the bridge of the nose, covering both the nose and mouth.
- Creates a tight seal on the mask using both hands (thumb and index finger form a "C" on the mask rim; the other fingers lift the jaw to maintain the airway).
- Delivers rescue breaths through the one-way valve: place your lips fully around the valve (or mouthpiece) to create an airtight seal; One breath over about 1 second, watching for visible chest rise; allows full exhalation.
- Gives two artificial respirations through the airway.
- Artificial respiration is performed 12 times per minute, and the amount of air is such that the chest cage is lifted.

#### **Step 5: AED usage:**

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***Open the device and place the pads at shoulder and belly level.***

✓

***Open the device and place the pads above the right breast and below the left breast.***

Participant

- Opens the device and places the electrode pads.
- Places one of the pads on the right upper chest (under the collarbone) and the other just below the left lower rib (near the armpit).

***Stand clear of the patients***

- The AED provides a voice prompt: "Stand clear of the patient."
- The device analyzes the rhythm.

### **Shock can be applied**

- The AED provides a voice prompt: “Shock can be applied.”

### **Press the shock button**

- The AED then prompts: “Press the shock button.”
- Participant presses the shock button, then continues CPR.

**After giving a shock, chest compression is started again. This process is repeated about 5 cycles for 2 minutes.**

- After 2 minutes, the participant checks the pulse of the carotid artery.
- “OK, he/she started breathing! We did it!”

**“Now we are waiting for the ambulance to arrive. Let’s place him/her to the recovery position”**

### **Tools and objects**

#### **Notes for developers:**

- All tools should be interactive, with grabbable or drag-and-drop mechanics.
- AED must include voice instructions and error detection (e.g., wrong pad placement).
- Tools must only be available at relevant points in the scenario to guide proper sequencing.
- If UI is used: each object should include labels and short tooltips

| Tool/Object                            | Description                                                                 | Purpose of Use                                        | Visual Reference (example)            |
|----------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------|
| CPR manikin                            | Adult-sized training dummy with realistic chest recoil and airway features  | For chest compressions and rescue breaths             | ♂ Medical training manikin            |
| Automated external defibrillator (AED) | With screen, voice prompts, and electrode pads                              | To analyze heart rhythm and deliver a shock if needed | ⚡ AED device with display and buttons |
| Defibrillator pads                     | Adhesive electrodes placed on the upper right chest and lower left rib area | To deliver shock from AED to the patient              | 📱 Stick-on chest pads                 |
| Pocket mask                            | One-way valve mask small enough to carry in a pocket                        | For more hygienic and effective rescue breathing      | 😊 Transparent CPR mask with strap     |

### **Evaluation and feedback**

#### **Performance analysis:**

- Data such as the number, depth and rhythm of chest compressions performed by the participant are analyzed.
- The effectiveness and appropriateness of artificial breathing is evaluated.

#### **Suggestion for improvement:**

- Strengths and weaknesses are reported to the participant (e.g., “Your CPR rhythm was excellent, but pay more attention to breath control”).

#### **Score and certification:**

Participants demonstrating successful performance can earn a digital certificate of achievement.



## **GLOSSARY OF TERMS**

ABC Approach: Airway, Breathing, Circulation - systematic assessment

AED: Automated External Defibrillator

BLS: Basic Life Support

CPR: Cardiopulmonary Resuscitation

Cardiac Arrest: Sudden loss of heart function

Carotid Pulse: Pulse on neck

Compression Depth: 5-6 cm for adults

Compression Rate: 100-120 per minute

Recovery Position: Side-lying position

ROSC: Return of Spontaneous Circulation

## SCENARIO 5: First Aid for an Open Abdominal Injury During a Flood

### What is learning outcome?

#### HARD skills:

Participants receiving this training:

1. Identify the signs of an open abdominal wound.
2. Avoid touching or replacing protruding organs.
3. Cover the wound correctly with moist sterile material.
4. Monitor signs of shock and deterioration.

#### SOFT skills:

Participants receiving this training:

1. Stay calm and focused in a high-stress, hazardous environment.
2. Communicate effectively with the injured person.

Act quickly and prioritize life-saving interventions.

### Description of the situation:

After a major flood submerges much of a residential neighborhood, the participant moves through murky, debris-filled water in search of survivors. Amid collapsed fences and submerged vehicles, an adult female is found lying on her back, groaning in pain. Her clothes are soaked and torn. As the participant gets closer, it's clear that she has suffered a deep, open abdominal injury, with bowel loops visibly protruding from the wound. The victim is conscious, pale, and in shock. She is trying to sit up and touch the exposed organs, unaware that this may cause further harm. This is a life-threatening emergency. The wound must be protected from further contamination, and the victim must be stabilized without applying pressure or trying to push the organs back in.

### ✓ Correct and timely interventions

(e.g., keeping the victim still, covering the wound with moist sterile dressing, preventing shock, calling for help) can protect internal organs, prevent infection, and save the victim's life.

### ✗ Incorrect, delayed, or omitted actions

(e.g., trying to push organs back inside, applying pressure, using dry or dirty material) can cause severe infection, internal damage, shock, or death.

### Description of the environment: (For all scenarios, description of the environment will be same)

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### Interaction – what should the participant do:

**Initial safety check:**

Participant observes surroundings, checking for electrical hazards, strong water currents, and sharp debris.



**Check the surroundings for water currents, debris, electrical hazards, collapsing walls.**



**Approach the victim immediately without checking the environment.**

- Stay calm.
- "Let's make sure the area is safe first."
- "This looks like a suitable place, away from power lines and debris."

**System feedback:**

✓ "The area appears safe."

**Identifying the victim person:**

A scene shows a conscious adult lying on the ground.

**There is an injured and conscious person here! .  
I need to act fast.**

**System feedback:**

✓ "Victim identified."

- A conscious adult female is lying on her back, visibly injured, and in distress.
- "She's seriously injured. That looks like an open abdominal wound. I need to act fast."

**Situation assessment:**

- Participant kneels and inspects the injury. Observes include deep abdominal laceration, protruding intestinal loops, pale and clammy skin, rapid breathing

***There's organ exposure-  
I must not touch them or  
push them back in***

**System feedback:**

✓ *“Correct assessment: Open abdominal injury.”*

- Participant says “There's organ exposure — I must not touch them or push them back in.”

**Step 1: Protect the wound**

Participant

- Puts on gloves.
- Gathers clean moist sterile dressing (or uses clean cloth soaked in water if sterile material is unavailable).
- Covers the wound and exposed organs without applying pressure.
- Does not attempt to push anything back inside.
- Says “I'm going to cover the wound to keep it moist and clean — try not to move.”

***I'm covering the wound  
to keep it moist and  
clean — try not to move.***

✓

***Moist        sterile  
dressing applied.***

×

***Organs touched or  
pushed inward.***

**Step 2: Prevent shock and monitor:**

Participant

- Gives a position for the victim in a supine position, knees slightly bent (Victim animation should support slight knee bend if environment and position permit) to reduce abdominal tension.
- Covers with thermal/emergency blanket to prevent heat loss.
- Talks calmly to the victim: “You're doing great. Stay still. Help is on the way.”



**Gives a position  
for the victim in  
a supine position**



**Covers with  
thermal/emergen  
cy blanket**

**System feedback:**

✓ *“Wound protected. Victim stabilized.”*

✗ *“Improper positioning — abdominal tension increasing.”*

**‘Open abdominal  
injury with organ  
exposure, conscious  
victim, signs of shock.’**

- **Calls 112 and gives a clear situation report.**

**System feedback:**

**If actions correct → “Wound protected. Victim stabilized.”**

**If incorrect (e.g., organ manipulation, dry cloth) → “Victim in pain. Condition worsening due to improper wound care.”**

## Tools and objects

### Notes for developers:

- Victim animation should show exposed organs and protective response (trying to touch wound).
- Interactive tools must allow user to: select moist dressing, place gently over wound, avoid incorrect actions like pushing organs in
- Include feedback prompts (positive/negative).
- Voice lines from victim: "It hurts... what's happening?", "Please help... my stomach..."
- Soundscape: Water flow, sirens, shouting, helicopters.
- Make sure objects are only usable in correct step order.

| Tool/Object               | Description                                                           | Purpose of Use                                                                                        | Visual Reference (example)                                                                                       |
|---------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Gloves                    | Rescuer safety                                                        |  Blue medical gloves | Gloves                                                                                                           |
| Phone (Virtual interface) | In-VR interface or voice command to simulate emergency call (112/911) | To contact emergency services and receive instructions                                                |  Virtual phone icon or screen |
| Moist dressing            | Sterile dressing or clean cloth soaked in clean water                 | To cover and protect exposed organs                                                                   | Moist dressing                                                                                                   |
| Emergency blanket         | Foil-type rescue blanket                                              | Prevent hypothermia                                                                                   | Emergency blanket                                                                                                |

## Evaluation and feedback

### Performance analysis:

- Select appropriate material to cover wound.
- Avoid manipulating exposed organs.
- Prevent shock and monitor vital signs.
- Communicate calmly and call emergency services.

### Suggestion for improvement:

- Strengths and weaknesses are reported to the participant (e.g., "You covered the wound properly, but remember to bend the knees slightly to reduce abdominal tension.").

### Score and certification:

Participants demonstrating successful performance can earn a digital certificate of achievement.



#### **GLOSSARY OF TERMS**

**Open Abdominal Wound:** A traumatic injury in which the abdominal wall is cut open and internal organs may be exposed.

**Evisceration:** Protrusion of internal organs—usually intestines—outside the abdominal cavity through a wound.

**Moist Sterile Dressing:** A sterile cloth or pad moistened with clean water or saline, used to protect exposed organs without causing tissue damage.

**Supine Position:** Victim lying flat on their back.

**Do Not Apply Pressure:** A key safety principle stating that pressure should never be placed on an open abdominal wound or exposed organs.

### SCENARIO 3: First Aid for Severe Leg Bleeding After an Earthquake

#### What is learning outcome?

##### **HARD skills:**

Participants receiving this training:

1. Recognize life-threatening bleeding.
2. Apply direct pressure effectively.
3. Apply a tourniquet correctly when direct pressure fails.
4. Ensure scene safety in a disaster environment.

##### **SOFT skills:**

Participants receiving this training:

5. Maintain composure during emergencies.
6. Make quick, accurate decisions.
7. Communicate effectively with bystanders and the victim.

#### **Description of the situation:**

Following a devastating earthquake in a densely populated urban area, the participant navigates through rubble and chaos. Amidst damaged buildings and scattered debris, a young adult male is spotted near the remains of a collapsed wall. He is conscious but in visible distress, lying on the ground and crying out in pain. As the participant approaches, it becomes immediately evident that the victim has suffered a traumatic injury to his lower right leg. A deep, open wound is present, and bright red blood is spurting from the site—indicating a severe arterial hemorrhage. Blood loss is rapid, and if not quickly controlled, the victim is at risk of going into hypovolemic shock and losing consciousness. This is a critical, life-threatening emergency. The participant must first ensure the scene is safe, then promptly begin hemorrhage control interventions.

#### **✓ Correct and timely interventions**

(e.g., applying strong direct pressure immediately, correctly positioning and tightening the tourniquet, noting the time of application) will control the bleeding, stabilize the victim, and allow time for emergency responders to arrive.

#### **✗ Incorrect, delayed, or omitted actions**

(e.g., weak or misplaced pressure, delay in tourniquet application, failure to record the time) will lead to continued blood loss, loss of consciousness, or death from exsanguination.

#### **Description of the environment: (For all scenarios, description of the environment will be same)**

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across

the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### **Interaction – what should the participant do:**

#### ***Initial safety check:***

The participant moves through the debris-filled area.



***Check for hazards  
(unstable walls,  
fire, debris) before  
approaching.***



***Go directly to the  
injured person  
without checking  
the scene.***

- Stay calm.
- “Let’s check the surroundings. We need to find a safe spot.”
- “This looks like a suitable place, away from power lines and debris.”

#### **System feedback:**

✓ “The area appears safe.”

#### ***Identifying the injured person:***

A scene shows a conscious adult lying on the ground



***Approach, confirm  
responsiveness,  
and call out for  
help (112)***

×

**Assume the victim is fine and delay contacting emergency services.**

**System feedback:**

✓ *"Victim identified."*

- "There is an injured person here! He looks conscious. We need to intervene immediately."
- "Alright, I'll call 112 and request emergency assistance."

**Situation assessment:**

✓

**Recognize: 'This is arterial bleeding — I must act immediately.'**

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**Think: 'It might stop on its own; I'll wait.'**

- The participant kneels next to the individual, touches his/her shoulder, and says, "'I'm here to help. Stay calm.'"
- Victim says I am not feeling Okay,
- Participant says "Oh, this is a serious leg wound. The blood is bright red and spraying out—this looks like arterial bleeding." "Stay with me, I'm going to stop the bleeding. You're going to be okay!"

**System Feedback:**

✓ *"Correct: Life-threatening arterial bleeding detected."*

**Step 1: Apply direct pressure:**

Participant

✓

**Puts on gloves**

×

**Grabs sterile gauze and applies firm, continuous, and direct pressure.**

- Puts on gloves.
- Grabs sterile gauze or clean cloth from first aid kit.
- Applies firm, continuous, and direct pressure using both hands and your body weight to maintain a consistent force of 100–200 mmHg.
- Keeps pressure for at least 1 minute.

**System Feedback:**

✓ "Bleeding continues. Direct pressure is not sufficient."

**✗ Mistake Feedback Options (if user fails):**

- "Too little pressure applied."
- "Wrong location — apply directly to the source of bleeding."

**Step 2: Apply a tourniquet:**

**The bleeding isn't stopping. We need a tourniquet!"**

Participant says "The bleeding isn't stopping. We need a tourniquet!"

- Retrieves tourniquet device.

✓

**Place the tourniquet 5–7 cm above the wound. Never over a joint**

×

**Place the  
tourniquet over  
a joint**

- Applies the tourniquet 5–7 cm above the wound, never over a joint.
- Tightens the strap until bleeding stops.
- Victim says, "It hurts!", "Thank you..."
- Secures the windlass and notes the time of application.

**System Feedback:**

✓ "Bleeding controlled. Well done!"

**Step 3: Call the ambulance and monitor the patient:**

Participant

- Presses a button on the VR phone or asks a virtual character to call for help.
- Monitors the patient, talks to him and checks his condition (breathing, reaction to stimuli).

**Step 4: Shock prevention:**

Participant

- Takes the thermofoil and covers the patient.

**Cover the victim  
with a  
thermal/emergen  
cy blanket to  
prevent shock.**

**Step 5: Completion of the scenario – arrival of rescuers:**

- After all the steps have been carried out correctly, an animation of the arrival of the ambulance and the paramedics who are taking over the patient will appear

**Stay with the  
victim. Keep  
talking to him  
until help arrives**

## Tools and objects

### Notes for developers:

- All tools (e.g., gauze, gloves, tourniquet) must be interactive, with grabbable or drag-and-drop mechanics.
- The tourniquet should include feedback for correct placement, tightening, and locking.
- Visual cues (e.g., blood flow slowing or stopping) should indicate effectiveness of the intervention.
- The bleeding animation must respond dynamically
- Include voice prompts and verbal responses from the victim (Environmental audio should reflect chaos and urgency: sirens, aftershocks, shouting in the distance).
- Tools (e.g., gloves, gauze, tourniquet) should only become available at the appropriate step to support proper sequencing.

| Tool/Object               | Description                                                           | Purpose of Use                                                                                        | Visual Reference (example)                                                                                         |
|---------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Gloves                    | Rescuer safety                                                        |  Blue medical gloves | Gloves                                                                                                             |
| Sterile gauze             | Initial bleeding control                                              | White gauze pads                                                                                      | Sterile gauze                                                                                                      |
| Tourniquet                | Severe bleeding control                                               |  Combat-style device | Tourniquet                                                                                                         |
| Phone (Virtual interface) | In-VR interface or voice command to simulate emergency call (112/911) | To contact emergency services and receive instructions                                                |  Virtual phone icon or screen |
| Notebook or marker        | Record application time                                               |  Time: 14:30       | Notebook or marker                                                                                                 |

## Evaluation and feedback

### Performance analysis:

- Whether the participant ensured scene safety before intervention.
- If direct pressure was applied correctly (location, duration, and force).
- If the tourniquet was applied at the correct position, tightened properly, and time of application was recorded.
- The speed and accuracy of decision-making between pressure and tourniquet.
- The participant's ability to communicate clearly with the victim and remain calm during the emergency.

### Suggestion for improvement:

- Strengths and weaknesses are reported to the participant (e.g., "Your direct pressure application was excellent, but pay more attention to apply pressure").

### Score and certification:

Participants demonstrating successful performance can earn a digital certificate of achievement.



## **GLOSSARY OF TERMS**

**Bleeding:** Bright red blood that spurts rhythmically; caused by damage to an artery. Life-threatening and requires immediate control.

**Direct Pressure:** Applying firm, continuous pressure directly over the bleeding site using sterile gauze or clean cloth.

**Tourniquet:** A mechanical device applied above a severe limb wound to compress blood vessels and stop arterial bleeding when direct pressure is insufficient.

**Windlass:** The tightening rod on a tourniquet used to apply mechanical force until bleeding stops.

**Time of Application:** The exact time the tourniquet is applied. Must be recorded and reported to emergency responders.

## SCENARIO 4: First Aid for an Open Chest Injury During a Flood

### What is learning outcome?

#### HARD skills:

Participants receiving this training:

1. Identify the signs of an open chest wound (sucking chest wound).
2. Create an occlusive (sealed) dressing using available materials.
3. Position the patient to optimize breathing.

#### SOFT skills:

Participants receiving this training:

4. Stay calm and focused in a high-stress, hazardous environment.
5. Communicate effectively with the injured person.
6. Act quickly and prioritize life-saving interventions.

### Description of the situation:

Following a severe flood that has struck a residential area, the participant navigates through deep, moving water filled with floating debris. Streets are submerged, and panicked survivors are seen wading through the current. Amidst the chaos, the participant notices an adult male leaning against a damaged car, breathing heavily and clutching his chest. As the participant approaches, it becomes clear that the victim has sustained a penetrating injury to the right side of his chest — an open chest wound. With every breath, a sucking sound is heard from the wound, and bubbles appear with blood — indicating a sucking chest wound. He is conscious, pale, and in visible respiratory distress. This is a life-threatening emergency. Air is entering the chest cavity, reducing lung expansion and oxygenation. Immediate first aid is necessary to seal the wound and support breathing.

### ✓ Correct and timely interventions

(e.g., sealing the wound with an occlusive dressing, allowing air to escape on one side, monitoring breathing) may prevent the development of tension pneumothorax and improve the victim's chances of survival.

### ✗ Incorrect, delayed, or omitted actions

(e.g., sealing all sides, doing nothing, failing to call for help) can cause respiratory failure, shock, or death.

### Description of the environment: (For all scenarios, description of the environment will be same)

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### Interaction - what should the participant do:

#### Initial safety check:

Participant observes surroundings, checking for electrical hazards, fast water currents, and sharp debris.

- Stay calm.



**Move to a stable, safe area away from fast water and debris.**

×

**Approach immediately without checking hazards.**

- “Let’s stay away from power lines and find stable footing.”
- “This looks like a suitable place, away from power lines and debris.”

**System Feedback:**

✓ “Environment safe. You may proceed.”

**Identifying the victim person:**

A scene shows a conscious adult sitting on the ground.



**Approach slowly and confirm the victim is conscious and breathing**

×

**Ignore victim’s breathing problems and begin random intervention.**

- A conscious adult male is sitting, leaning against debris, breathing rapidly and clutching his chest.

- “He’s hurt—looks like he has a chest injury. I need to help immediately.”

**System Feedback:**

✓ “Victim identified. Proceed to wound assessment.”

**Situation assessment:**

- Participant kneels and inspects the injury. Observes include bubbling blood, sucking sound with each breath, shallow and fast breathing

✓

**This is a sucking  
chest wound — I  
must seal it  
immediately.**

×

**This is a minor cut  
— I’ll wait and see**

- Participant says “This is a sucking chest wound. I need to seal it now.”

**System Feedback:**

✓ “Correct: Open chest wound detected.”

**Step 1: Seal the wound (non-occlusive dressing):**

Participant

✓

**Apply non-  
occlusive dressing**

×

**Apply occlusive  
dressing**

- Puts on gloves.
- Finds a non-occlusive dressing.
- Places it directly over the wound.
  - Ensure it fully covers the wound and the skin surrounding it.
  - The material should extend at least 5 cm (2 inches) beyond the edges of the wound in all directions.
  - Use tape or adhesive to seal the four sides.
- Says "This should keep air from getting in but let trapped air escape."

**System Feedback:**

✓ *"Wound sealed properly. Air can escape safely."*

**Step 2: Monitor and support:**

Participant

✓

*Help victim sit in  
s e m i - F o w l e r  
position to ease  
breathing.*

×

*Lay victim flat on  
his back*

- Gives a position for the victim in a semi-fowler position if possible, to ease breathing.
- Talks calmly to the victim: "You're doing great. Try to stay calm and keep breathing slowly."
- Participant continuously monitors for signs of: Worsening breathing, skin color changes, consciousness level
- Calls 112 and provides situation update.

**System feedback:**

If actions correct → *"Wound sealed. Breathing stabilizing."*

If incorrect (e.g., sealing all 4 sides) → *"Air is trapped — victim is getting worse!"*

## Tools and objects

### Notes for developers:

- Victim animations should show labored breathing, bubbling wound, clutching chest.
- Interactive tools should include plastic-like objects usable as chest seals.
- Dressing mechanics must allow 3-side seal with optional valve effect.
- System should react to participant choices with visual and audio feedback.
- Include voice prompts from the victim: "It's hard to breathe...", "Help... my chest..."
- Sound design should include water movement, rain, sirens, and people shouting.
- Ensure objects (e.g., gloves, phone) are only accessible at appropriate times.

| Tool/Object               | Description                                                                                    | Purpose of Use                                                                                        | Visual Reference (example)                                                                                       |
|---------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Gloves                    | Rescuer safety                                                                                 |  Blue medical gloves | Gloves                                                                                                           |
| Phone (Virtual interface) | In-VR interface or voice command to simulate emergency call (112/911)                          | To contact emergency services and receive instructions                                                |  Virtual phone icon or screen |
| Non-Occlusive Dressing:   | A dressing that allows air to escape and prevents pressure buildup — safer for chest injuries. | Temporary non-occlusive dressing                                                                      | Dressing                                                                                                         |
| Tape                      | To secure dressing on 4 sides                                                                  | Not remove dressing                                                                                   | Tape                                                                                                             |

## Evaluation and feedback

### Performance analysis:

- Uses appropriate material to seal the wound.
- Leaves one side unsealed for air release.
- Monitors victim's condition and position appropriately.
- Calls emergency services.
- Communicates clearly throughout.

### Suggestion for improvement:

- Strengths and weaknesses are reported to the participant (e.g., "You recognized the chest wound well, but remember to leave one side open to prevent tension buildup.").

### Score and certification:

Participants demonstrating successful performance can earn a digital certificate of achievement.



### **GLOSSARY OF TERMS**

**Sucking Chest Wound:** An injury in which a hole in the chest wall allows air to be drawn into the chest cavity with each breath.

**Non-Occlusive Dressing:** A dressing that allows air to escape and prevents pressure buildup — safer for chest injuries.

**Occlusive Dressing:** A special dressing that completely seals the chest wound to prevent air from entering the chest cavity.

**Tension Pneumothorax:** A life-threatening condition in which trapped air in the chest cavity compresses the lung and heart. Incorrect sealing of the wound (for example, taping all four sides) can cause this condition.

**Semi-Fowler Position:** A position in which the patient is placed in a semi-upright posture (head and chest elevated at about 30–45 degrees).

## SCENARIO 2: First Aid for Airway Obstruction (Choking) in an Adult During a Landslide

### What is learning outcome?

#### HARD skills:

Participants receiving this training:

1. Recognize signs of partial and complete choking.
2. Encourage coughing during partial obstruction.
3. Apply back blows and abdominal thrusts (Heimlich maneuver) during complete obstruction.
4. React appropriately if the person becomes unresponsive.

#### SOFT skills:

Participants receiving this training:

1. Stay calm under pressure.
2. Provide reassurance to the victim.
3. Make quick, correct decisions and guide bystanders effectively.

#### Description of the situation:

After a heavy rain-induced landslide, the participant moves through a muddy, unstable terrain scattered with broken tree branches, rocks, and disoriented survivors. Among a group of people, an adult male begins coughing intensely, holding his throat and gasping for air. He appears panicked but is still able to cough—a sign of partial airway obstruction.

Moments later, the victim suddenly stops coughing. He opens his mouth in silence, can't breathe or speak, and his hands clutch his throat in the universal choking sign. His face starts turning red and anxious. This is a life-threatening emergency. The participant must act quickly to assess the severity and relieve the obstruction before the person loses consciousness.

#### ✓ Correct and timely interventions

(e.g., encouraging coughing, applying effective back blows and abdominal thrusts, calling for help) may successfully remove the object and restore breathing.

#### ✗ Incorrect, delayed, or omitted actions

(e.g., ineffective back blows and abdominal thrusts application) will result in loss of consciousness, full airway blockage, and may lead to cardiac arrest if not resolved.

#### Description of the environment: (For all scenarios, description of the environment will be same)

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

#### Interaction – what should the participant do:

##### Initial safety check:

Participant surveys the area for falling rocks or unstable ground.



**Check surroundings for falling rocks, unstable ground, and hazards.**

×

**Approach the choking victim immediately without looking around**

- Stay calm.
- “Let’s check the surroundings. We need to find a safe spot.”
- “This looks like a suitable place, away from power lines and debris.”

**System Feedback:**

✓ “Environment safe. You may proceed.”

**Identifying the victim person:**

A scene shows a conscious adult standing and running around in panic, appearing disoriented and distressed.



**Observe the victim and confirm he is conscious and coughing.**

×

**Assume he is fainting and begin chest compressions.**

- A conscious adult male is coughing violently and holding his throat.
- “He’s choking but still coughing—he might be able to clear it himself.”

### System Feedback:

✓ *"Victim identified — possible airway obstruction."*

### Situation assessment:

- The participant approaches the individual, touches his/her shoulder, and says, "'I'm here to help. Stay calm."
- Victim (coughing) "Help me...please."
- Participant says, "He's choking but still coughing—he might be able to clear it himself."

### Step 1: Partial obstruction:

Participant

✓

Encourage him to  
keep coughing:  
'Keep coughing!  
You're doing great

x

Immediately  
perform  
abdominal thrusts  
even though he is  
still coughing

- Encourages the victim to keep coughing. "Keep coughing! You're doing great, don't stop!"

### System Feedback:

✓ *"Correct — coughing is the best way to clear obstruction."*

### Step 2: Complete obstruction:

- Victim stops coughing and breathing, showing silent distress.
- Victim makes the universal choking sign (he instinctively places both hands around his throat)
  - Participant must act immediately: Ask: "Are you choking?" "Hang in there—I'm going to help you breathe again!"

✓

Lean victim  
forward and  
deliver 5 firm back  
blows between  
shoulder blades.

×

**Place fist above navel, wrap arms around waist, perform 5 quick upward thrusts.**

- Participant performs 5 back blows between shoulder blades. Participant
  - Stands to the side and slightly behind the victim.
  - Uses one arm to support the person's chest.
  - Place this hand across their chest, and if possible, lean the person forward at the waist so that their upper body is angled downward.
  - Expose the upper back (between shoulder blades- scapulae).
  - With the heel of your other hand (the base of the palm, not the fingers), deliver firm and sharp blows between the person's shoulder blades.
- Participant performs 5 abdominal thrusts (Heimlich maneuver) after 5 back blows. Participant
  - Places the thumb side of your fist in the area between the navel and the lower end of the breastbone (xiphoid process)
  - Stands behind the person and wrap your arms around their waist.
  - Makes a fist with one hand.
  - Grasps your fist with your other hand.
  - Performs quick and forceful upward thrusts (inward and upward) into the abdomen.

✓

**Repeat sequence: 5 back blows + 5 abdominal thrusts until object comes out or victim collapses.**

×

**Stop after one cycle and assume the object will come out eventually.**

- The sequence of five back blows followed by five abdominal thrusts is repeated until the obstructing object is expelled or the patient becomes unresponsive.

**System feedback:** If actions correct → “Object dislodged! The victim is breathing again.”

### Tools and objects

#### Notes for developers:

- Victim animations must show universal choking sign, coughing and panic.
- Transitions from partial to complete obstruction must be visible and time-based.
- Back blows and abdominal thrusts must be interactive, using hand motion tracking.
- Add feedback for successful and failed techniques (e.g., "Too weak", "Good thrust").
- Include voice prompts from the victim: “I can’t breathe!”, “Help me!”, coughing sounds.
- Ensure objects (e.g., gloves, phone) are only accessible at appropriate times.
- Include voice prompts and verbal responses from the victim (Environmental audio should reflect chaos and urgency: sirens, aftershocks, shouting in the distance).

| Tool/Object               | Description                                                           | Purpose of Use                                                                                        | Visual Reference (example)                                                                                       |
|---------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Gloves                    | Rescuer safety                                                        |  Blue medical gloves | Gloves                                                                                                           |
| Phone (Virtual interface) | In-VR interface or voice command to simulate emergency call (112/911) | To contact emergency services and receive instructions                                                |  Virtual phone icon or screen |

### Evaluation and feedback

#### Performance analysis:

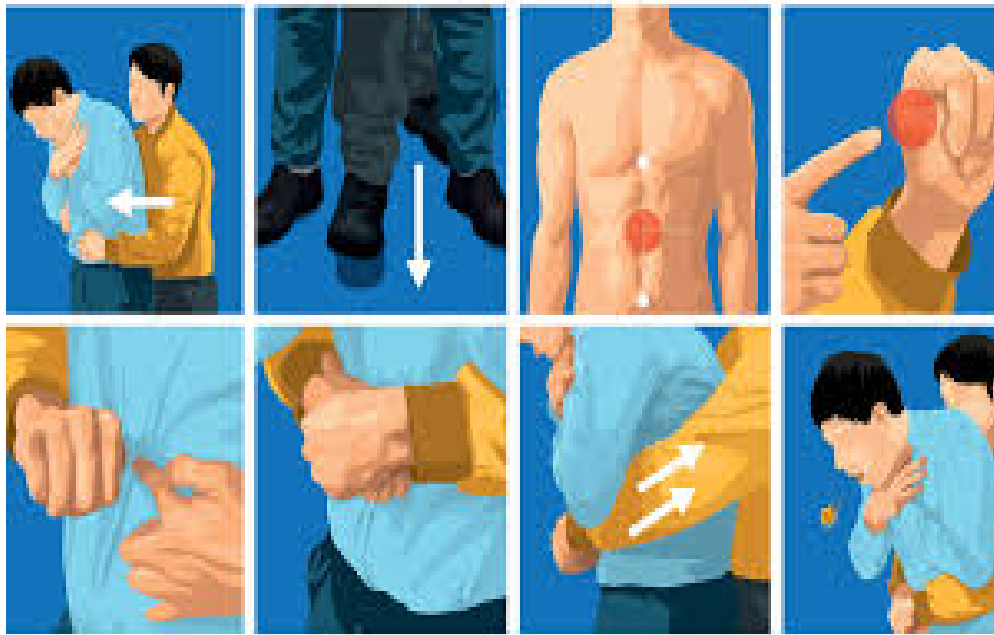
- Recognizes the choking stage correctly.
- Encourages coughing when appropriate.
- Applies back blows and abdominal thrusts with correct technique.
- Acts quickly when the victim becomes unresponsive.
- Communicates clearly throughout.

#### Suggestion for improvement:

- Strengths and weaknesses are reported to the participant (e.g., “Your back blow application was excellent, but pay more attention to apply pressure”).

#### Score and certification:

Participants demonstrating successful performance can earn a digital certificate of achievement.



## GLOSSARY OF TERMS

**Airway Obstruction (Choking):** Airway blockage caused by a foreign object preventing normal breathing. Can be *partial* or *complete*.

**Partial Obstruction:** The airway is partially blocked. The victim **can still cough, breathe, or make sounds**.

Coughing is the most effective way to clear the obstruction.

**Complete Obstruction:** The airway is **fully blocked**. The victim **cannot cough, speak, or breathe**, often holding their throat (universal choking sign). This is life-threatening.

**Universal Choking Sign:** A natural instinctive gesture where the victim places both hands around the throat indicating they cannot breathe.

**Back Blows:** A first aid technique involving delivering **5 firm blows** with the heel of the hand between the victim's shoulder blades while leaning them forward, to dislodge an airway obstruction.

**Abdominal Thrusts (Heimlich Maneuver):** A lifesaving technique applied during complete obstruction. The rescuer stands behind the victim, places a fist above the navel, and performs **quick upward thrusts** to expel the obstructing item.

## SCENARIO 6: First Aid for a Femur Fracture During a Tornado

### What is learning outcome?

#### HARD skills:

Participants receiving this training:

1. Recognize signs and symptoms of a femur fracture.
2. Apply proper leg immobilization techniques using splints or improvised materials.
3. Monitor circulation below the injury site.
4. Take actions to prevent shock.

#### SOFT skills:

Participants receiving this training:

1. Stay calm and focused on extreme weather conditions.
  2. Reassure the injured person and communicate effectively.
- Prioritize life-saving interventions and manage time efficiently.

### Description of the situation:

After a violent tornado hits a rural residential area, strong winds and flying debris have caused massive destruction. Trees have fallen, power poles are down, and buildings are damaged. The participant navigates through debris and wind-blown objects while seeking survivors. A conscious adult female is seen lying on the muddy ground next to a collapsed wooden fence. She is crying out in pain and unable to move her right leg, which is visibly swollen, deformed, and angled abnormally. She reports hearing a crack and feeling severe pain when she fell. This is a suspected femur fracture, which can lead to severe internal bleeding and shock if not properly managed. The participant must stabilize the leg, calm the victim, and monitor for signs of deterioration.

### ✓ Correct and timely interventions

(e.g., immobilizing the leg, padding between legs, monitoring for circulation and shock, calling for emergency help) can reduce pain, prevent further injury, and improve survival.

### ✗ Incorrect, delayed, or omitted actions

(e.g., moving the leg, applying pressure, failing to immobilize) can cause internal bleeding, increased pain, neurovascular damage, or shock.

### Description of the environment: (For all scenarios, description of the environment will be same)

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### Interaction – what should the participant do:

#### Initial safety check:

Participant observes surroundings, checking for power line hazards, safe footing and falling debris or unstable structures.



**Check surroundings for falling debris, power lines, unstable structures**

✗

**Approach the injured victim immediately without checking hazards.**

- Stay calm.
- “We need to stay away from hanging wires and find a secure area.”
- “This looks like a suitable place, away from power lines and debris.”

**System Feedback:**

✓ “Area safe. You may assist the victim.”

**Identifying the victim person:**

A scene shows a conscious adult lying on the ground.



**Approach calmly and confirm the victim is conscious and unable to move her leg.**

✗

**Attempt to lift the victim to a sitting positioning hazards.**

- A conscious adult female is lying on her back, holding her thigh and grimacing in pain.
- “She’s hurt—her leg looks deformed. It might be a femur fracture.”

**System Feedback:**

✓ “Victim identified — suspected femur fracture.”

**Situation assessment:**

✓

**Inspect from the side: swelling, deformity, pain, leg rotation — do NOT move the leg.**

×

**Straighten the leg to see if the deformity improves.**

- Participant kneels and inspects the injury. Observes include swelling, bruising, deformity in the thigh, inability to move the leg, possible leg shortening or outward rotation
- “She can’t move it, and the shape doesn’t look right. I won’t try to reposition it.”
- Calls 112 to report a femur fracture with possible internal bleeding.

**System Feedback:**

✓ “Correct — do not reposition a suspected femur fracture.”

**Step 1: Immobilize the fracture**

Participant

✓

**Gather two rigid splints + padding + bandages without lifting the leg.**

×

***Lift the injured leg to place splints underneath.***

- Says "I'm stabilizing your leg to keep it from moving. Try to stay still."
- Puts on gloves.
- Gathers two long, rigid splints (wood, plastic, or metal), each extending from the hip to the ankle.
- Wraps soft cloth or towel around the edges of the splints to reduce pressure and protect the skin.
- Adds soft padding, especially at the thigh, knee, and ankle areas, between the leg and the splints.

✓

***Place splints along inner & outer sides of the leg, add padding, tie at thigh/knee/calf/ankle***

×

***Tie only at one point and keep the splints loose to avoid discomfort.***

- Gives a position along the inner and outer sides of the injured leg, without lifting or moving it.
- Uses bandages, cloth strips, or triangular scarves, the participant secures the leg at 3 to 4 points: upper thigh, just above the knee, mid-calf, around the ankle
- Ties firm enough to prevent movement, but not too tight, ensuring that circulation is not restricted.

## Step 2: Prevent shock and monitor:

Participant

- Covers the victim with a blanket or coat to prevent hypothermia.
- Talks calmly to the victim: "You're doing great. I've got your leg supported—help is on the way."
- Participant continuously monitors for signs of: rapid heartbeat, weak pulse, fading consciousness

### System feedback:

If actions correct → "Leg stabilized. Circulation intact. Victim calm."

If incorrect → "Victim in pain. Circulation impaired. Risk of shock increasing."

### Tools and objects

#### Notes for developers:

- Victim animation must show obvious leg deformity, moaning, and limited movement.
- Provide splintable objects and allow users to drag and tie.
- Leg must not be moved; only stabilization allowed.
- Include feedback like: "Too tight – circulation impaired", "Good immobilization."
- Voice prompts: "My leg hurts so much...", "I heard a snap when I fell..."
- Environment sounds: wind, debris impact, sirens, thunder, rain.

| Tool/Object               | Description                                                           | Purpose of Use                                                                                          | Visual Reference (example)                                                                                         |
|---------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Gloves                    | Rescuer safety                                                        |  Blue medical gloves | Gloves                                                                                                             |
| Phone (Virtual interface) | In-VR interface or voice command to simulate emergency call (112/911) | To contact emergency services and receive instructions                                                  |  Virtual phone icon or screen |
| Splints                   | Wooden sticks, rods, or umbrellas                                     | Immobilization                                                                                          | Splints                                                                                                            |
| Cloth / Bandage           | Ties or wraps                                                         | To secure the splints or bind legs                                                                      | Cloth / Bandage                                                                                                    |
| Padding                   | Clothing, towels, or foam                                             | To cushion between legs or splints                                                                      | Padding                                                                                                            |
| Emergency blanket         | Foil-type rescue blanket                                              | Prevent hypothermia                                                                                     | Emergency blanket                                                                                                  |

### Evaluation and feedback

#### Performance analysis:

- Recognized signs of femur fracture
- Did not attempt to reposition the leg
- Applied correct immobilization
- Checked circulation and monitored victim
- Called emergency services
- Reassured the victim and minimized movement

#### Suggestion for improvement:

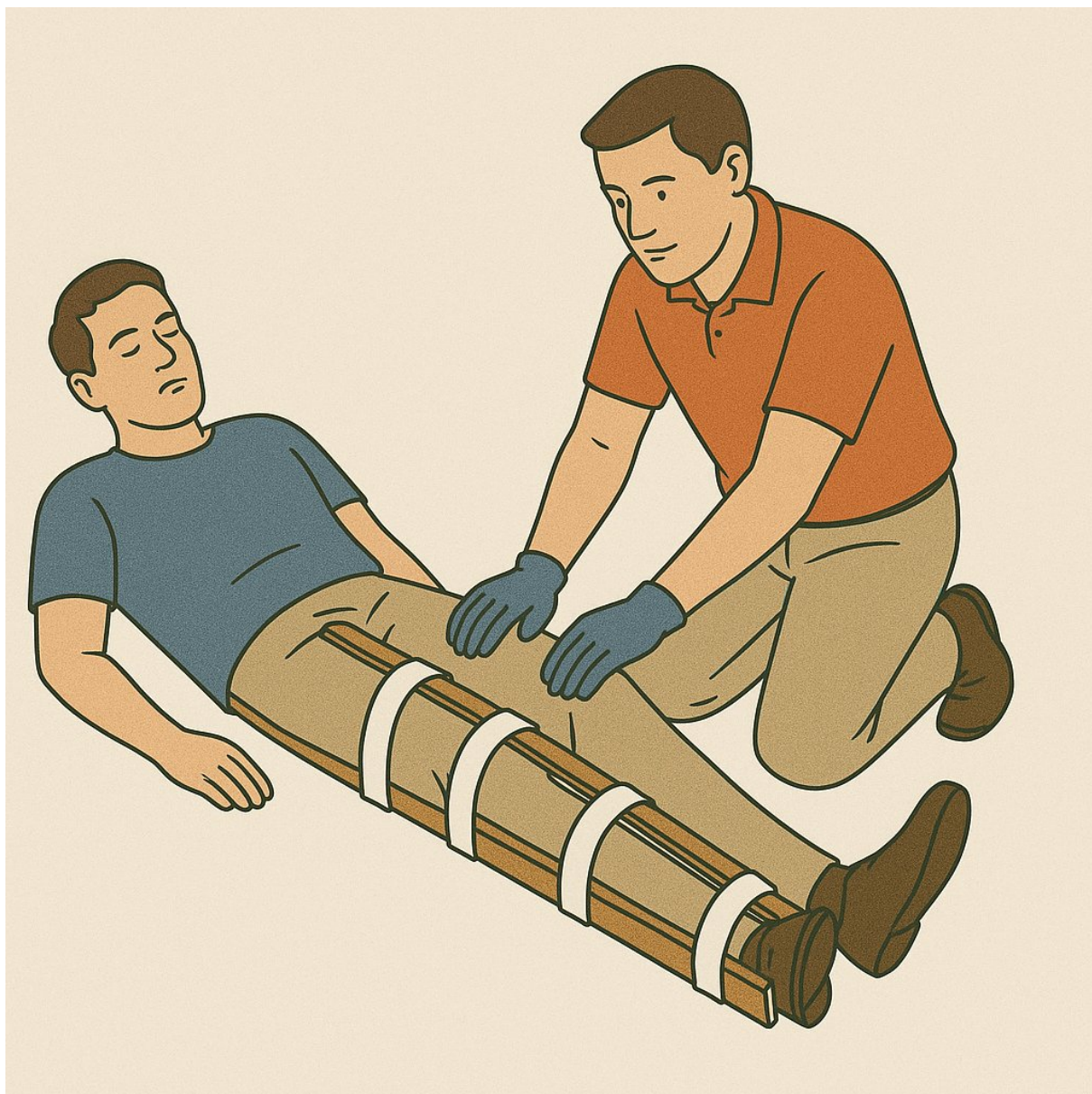
- Strengths and weaknesses are reported to the participant (e.g., "You stabilized the leg well, but

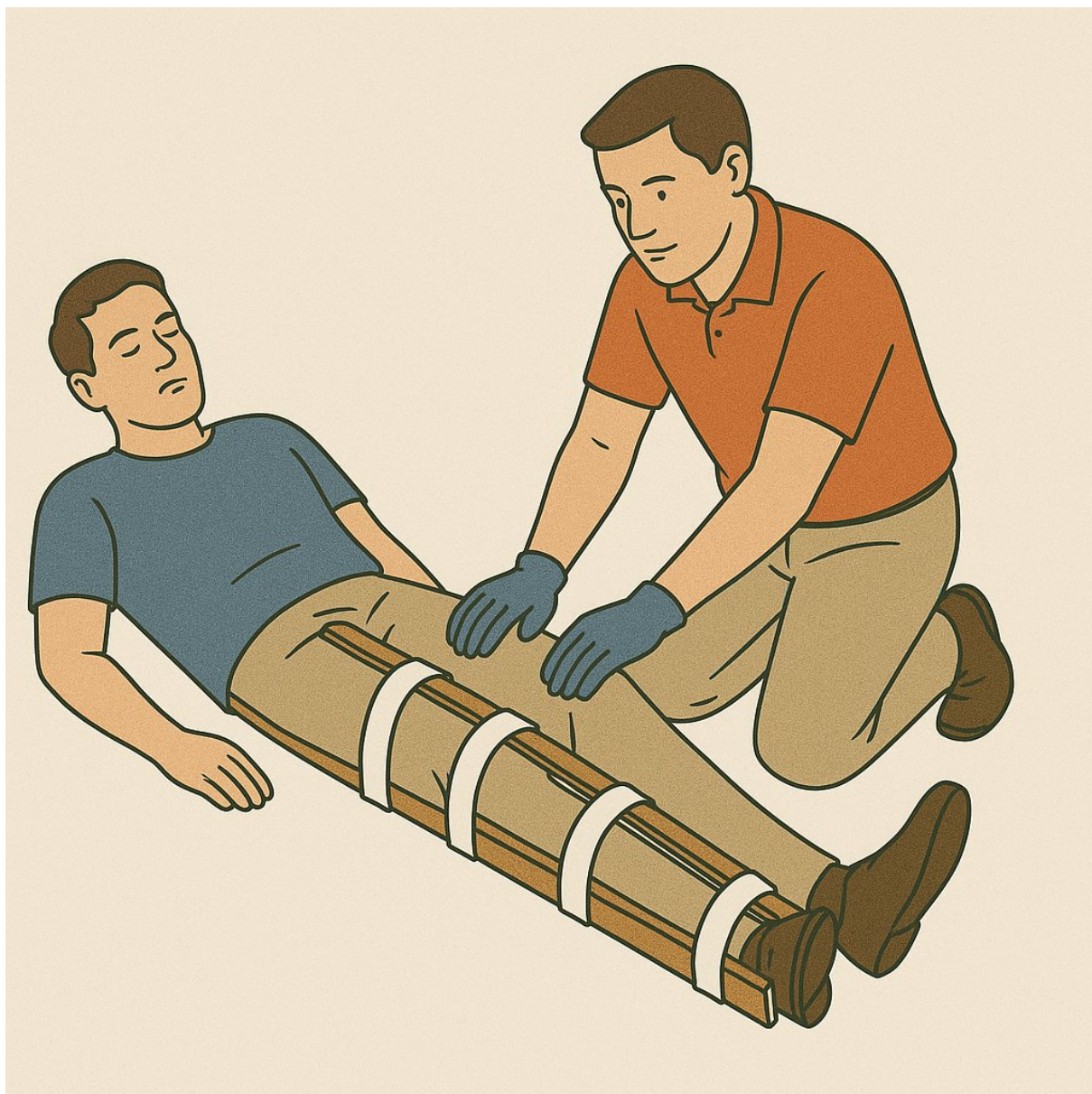
don't forget to check foot circulation after tying.").

***Score and certification:***

Participants demonstrating successful performance can earn a digital certificate of achievement.









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## GLOSSARY OF TERMS

**Femur Fracture:** A break in the thigh bone, often causing severe pain, deformity, swelling, and risk of internal bleeding.

**Immobilization:** Stabilizing the injured leg using splints, padding, and securing materials to prevent movement.

**Splints:** Rigid supports (wood, plastic, poles, rods, umbrellas) placed on both sides of the injured leg to hold it still.

**Padding:** Soft materials such as towels, folded cloths, jackets used to cushion between the leg and splints.

**Bandages / Ties:** Cloth strips or triangular scarves used to secure splints at multiple points.

## SCENARIO 8: Infection Prevention and Control Measures After an Earthquake

### What is learning outcome?

#### HARD skills:

Participants receiving this training:

1. Perform hand hygiene with soap and water or alcohol-based rubs
2. Correctly don and doff gloves, masks, and other PPE
3. Apply respiratory hygiene practices
4. Safely dispose of contaminated waste and sharps

#### SOFT skills:

Participants receiving this training:

5. Maintain composure and hygiene focus in disaster environments
6. Communicate infection risks and protective practices to patients and team
7. Prioritize safety for self, patient, and surroundings

### Description of the situation:

A 7.3 magnitude earthquake has struck a densely populated city. Emergency shelters are being set up. The participant is deployed to a makeshift first aid zone near a collapsed building. Dozens of injured civilians are being treated under tents. Dust, debris, bodily fluids, and crowding create an extremely high risk for infection transmission. The participant must provide wound care for a young adult male with a bleeding forearm. Nearby patients are coughing and injured. PPE is available in limited supply. Hand hygiene, proper PPE use, and safe disposal must be strictly followed to prevent disease outbreaks.

#### ✓ Correct and timely interventions

(e.g., hand hygiene, PPE use, safe wound dressing, waste segregation) protect both patient and caregiver from infection.

#### ✗ Incorrect, delayed, or omitted actions

(e.g., no gloves, no hand hygiene, poor waste disposal) increase cross-contamination and public health risks.

### Description of the environment: (For all scenarios, description of the environment will be same)

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### Interaction – what should the participant do:

#### 1. Prepare for care (before contact):

Participant



Perform hand hygiene and put on gloves/mask before touching the patient

×

Start wound care immediately without hand hygiene or PPE.

- Says "Let me sanitize my hands and put on gloves before touching the wound."
- Puts on gloves and mask using correct donning technique.
- Uses hand sanitizer or soap and water.
- Checks that sharps disposal and waste bins are available.

**System Feedback:**

✓ "Hand hygiene completed. PPE worn correctly."

**2. Assess wound and environment:**

Participant

✓

Ask coughing individuals to wear a mask and provide one if needed.

×

Ignore coughing people — continue wound care without addressing respiratory hazards.

- Approaches patient calmly.
- Observes coughing individuals nearby and asks them to wear masks.
- Provides patient a tissue or mask if needed (respiratory hygiene).

**System Feedback:**

✓ *“Respiratory hygiene applied.”*

**3. Wound care and dressing:**

Participant

✓

Use clean  
water/antiseptic,  
avoid touching  
sterile gauze with  
contaminated  
fingers.

×

Use the same dirty  
cloth to wipe the  
wound multiple  
times.

- Cleans wound using clean water or antiseptic.
- Applies sterile gauze without touching inner surface.
- Avoids cross-contamination by using one hand for clean tools and one for contact.
- Says *“This dressing is clean and sterile. Try not to touch it.”*

**System Feedback:**

✓ *“Dressing applied safely.”*

**4. Waste disposal and doffing:**

Participant

✓

Dispose of used  
gloves, gauze, and  
tissues into  
labeled infectious  
waste bin

x

**Throw used gauze and gloves on the ground or into regular trash.**

- Places used gloves, gauze, tissues in labeled infectious waste bin.
- Disposes of sharps (if used) into puncture-resistant sharps container.
- Removes PPE in correct order without self-contamination.
- Performs hand hygiene again after PPE removal.

**System feedback:**

If actions correct → "Hand hygiene completed. Gloves worn properly.", "Wound cleaned and covered with sterile dressing.", "Used PPE disposed of safely."

If incorrect "No hand hygiene – contamination risk increased.", "Gloves removed incorrectly – self-contamination possible.", "Sharps disposed in wrong bin – safety violation."

## Tools and objects

### Notes for developers:

- Include realistic donning and doffing of PPE with step prompts.
- Trigger feedback if gloves are not worn, or hand hygiene skipped.
- Add ambient risk: coughing NPCs, blood on surfaces, supply scarcity.
- Include a “contamination alert” animation if participant touches a wound without PPE.
- Allow drag-and-drop waste disposal and timed infection control steps.

| Tool/Object           | Description                               | Purpose of Use                                                                                        | Visual Reference (example) |
|-----------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------|
| Gloves                | Rescuer safety                            |  Blue medical gloves | Gloves                     |
| Surgical mask         | Worn by participant and coughing patients | Prevent respiratory droplet spread                                                                    | Surgical mask              |
| Hand sanitizer/soap   | For before and after patient contact      | Core of infection control                                                                             | Hand sanitizer/soap        |
| Sterile gauze & wipes | For wound cleaning and dressing           | Maintain asepsis                                                                                      | Sterile gauze & wipes      |
| Waste bags (marked)   | For infectious and general waste          | Environmental hygiene                                                                                 | Waste bags (marked)        |
| Sharps container      | Hard plastic with puncture resistance     | Safe sharps disposal                                                                                  | Sharps container           |

## Evaluation and feedback

### Performance analysis:

- Performed hand hygiene before and after patient contact.
- Selected appropriate PPE and worn them correctly.
- Completed wound care using sterile technique.
- Applied respiratory hygiene and cough etiquette.
- Contaminated materials and sharps disposed safely.

### Suggestion for improvement:

- Strengths and weaknesses are reported to the participant (e.g., “Good wound care, but be sure to sanitize again after glove removal.” , “You forgot to ask coughing patients nearby to wear masks — try to reduce exposure.”).

### Score and certification:

Participants demonstrating successful performance can earn a digital certificate of achievement.



## GLOSSARY OF TERMS

**Hand Hygiene:** Cleaning hands with soap & water or alcohol-based sanitizer to prevent infection spread.

**PPE (Personal Protective Equipment):** Protective gear (gloves, masks, gowns) used to reduce infection transmission.

**Donning:** Correct process of putting on PPE in the proper order to maintain sterility.

**Aseptic Technique:** Procedures used to prevent contamination when treating wounds.

**Infectious Waste:** Contaminated materials (gloves, gauze, bodily-fluid-soaked items) requiring special disposal.

**Sterile Dressing:** Clean medical covering that protects a wound from contaminants.

**Environmental Hygiene:** Maintaining a clean, safe environment by proper waste disposal and minimizing contamination.

**Self-Contamination:** Accidental exposure caused by improper PPE handling or hygiene practices.

**Infection Transmission:** Spread of pathogens through contact, droplets, contaminated surfaces, or unclean hands.

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## SCENARIO 7: First Aid for a Seizure During a Forest Fire

### What is learning outcome?

#### **HARD skills:**

Participants receiving this training:

1. Ensure environmental safety during a fire.
2. Protect a seizure victim from harm without restraining them.
3. Position the person in recovery position after the seizure.
4. Monitor breathing and consciousness.

#### **SOFT skills:**

Participants receiving this training:

1. Stay calm in high-stress situations.
2. Reassure the injured person and communicate effectively.
3. Make fast, appropriate decisions

Prioritize life-saving interventions and manage time efficiently.

### **Description of the situation:**

During an ongoing forest fire, thick smoke fills the air and emergency personnel are evacuating the area. The participant navigates a smoky trail surrounded by falling ash, scorched vegetation, and panicked animals. Suddenly, a middle-aged man collapses to the ground, begins to convulse, and shows signs of a generalized tonic-clonic seizure. He is lying on rocky terrain near burning brush. His arms and legs are jerking, his jaw is clenched, and he is unresponsive. Nearby branches and sharp rocks pose injury risks. The participant must act immediately to clear the area, protect the victim, and monitor the seizure without restraining the person.

### ✓ **Correct and timely interventions**

(e.g., clearing objects, protecting the head, timing the seizure, placing in recovery position after the seizure) will protect the victim from injury and support post-seizure recovery.

### ✗ **Incorrect, delayed, or omitted actions**

(e.g., holding down the person, putting something in the mouth, failing to position after the seizure) may cause further injury, airway obstruction, or delay recovery.

### **Description of the environment: (For all scenarios, description of the environment will be same)**

The scenario takes place in a densely populated urban neighborhood that has been severely impacted by a recent earthquake. The surroundings are chaotic and hazardous. Collapsed buildings dominate the landscape, and large piles of debris obstruct the streets and sidewalks. There is a fire and heavy water flow around. A thick layer of dust hangs in the air, limiting visibility. Sounds of distress echo in the background—shouts for help, distant sirens, and the occasional rumble of aftershocks. Structural instability is evident, with partially damaged walls swaying slightly and loose objects scattered across the area.

Despite the devastation, several disoriented bystanders are present, standing at a distance in shock and confusion.

### **Interaction - what should the participant do:**

#### **Initial safety check:**

Participant observes surroundings.



**Clear nearby hazards (fire, rocks, branches) before assisting.**

×

**Rush directly to the victim without checking for fire hazards.**

- Stay calm.
- “Let me check for fire hazards and make sure it’s safe to help.”
- Clears the area around the victim.
- Removes nearby sharp, hot, or dangerous objects (rocks, branches).

**System Feedback:**

✓ “Area safe. You may assist the victim.”

**Identifying the victim person:**

A scene shows an unconscious adult lying on the ground.



**Observe full-body convulsions and confirm he is unresponsive.**

×

**Try to grab his arms to stop the shaking.**

- An unconscious adult male is lying on his back and full-body convulsions.

**System Feedback:**

✓ “Seizure identified — do NOT restrain the victim.”

**Situation assessment:**

- Participant kneels and observes full-body convulsions, clenched jaw, and unresponsiveness.
- “He's having a seizure. I need to protect him without holding him down.”

**Step 1: During seizure:**

Participant



**Time the seizure  
and place a soft  
item under the  
head.**

×

**Put something in  
the mouth to  
prevent tongue  
swallowing.**

- Starts timing the seizure with virtual watch or clock.
- Does not put anything in the mouth or attempt to restrain the limbs.
- Places a soft item under the victim's head to prevent head injury.

**System Feedback:**

✓ “Head protected. Timing started.”

**Step 2: After the seizure:**



**Check  
responsiveness,  
breathing, and  
prepare to move  
into recovery  
position.**

×

**Leave him on his back and wait for him to wake up on his own.**

"It looks like the seizure has stopped. Time to check breathing and recovery."

Participant

- Checks for responsiveness.
  - Tap the patient's shoulder and call their name to check for responsiveness: "Can you hear me?", "Are you okay?"
- Turns victim into the recovery position:
  - On their side.
  - Head tilted slightly back.
  - Mouth downward to drain saliva/vomit.
- Checks for breathing
  - **Look:** The chest is rising and falling.
  - **Listen:** You hear breath sounds from the mouth.
  - **Feel:** You feel air on your cheek.
- Covers the victim with a thermal blanket if needed.
- "He's breathing. I'll keep him on his side until help arrives."

**Step 3: Call emergency services:**

Participant

- Uses virtual phone or asks helper to call **112** and report:
- "Adult male, seizure in a forest fire zone. Unconscious but breathing."

**System feedback:**

If actions correct → "Area secured. Victim protected during seizure. Head supported safely."  
"Seizure timed accurately. Victim placed in recovery position after convulsions stopped."

If incorrect → "Attempted to restrain the victim – this can cause injury."  
"Nothing placed under the head – risk of head trauma."  
"Mouth opened during seizure – this can lead to airway injury or choking."  
"Victim left on back after seizure – airway could be blocked."  
"Recovery position skipped – risk of aspiration."

## Tools and objects

### Notes for developers:

- Seizure animation should include: Full-body tonic-clonic convulsions. Jaw clenching, limb jerking, eyes unresponsive.
- Participant should be able to: Grab and move branches or rocks. Place soft item under head. Initiate timer. Roll victim into recovery position with prompts.
- Voice prompts: Before seizure: "I feel dizzy..."; During: groaning/sounds; After: "What happened? Where am I?"
- Environment should include: Smoke, fire sounds, wind. Limited visibility. Flying ash particles

| Tool/Object               | Description                                                           | Purpose of Use                                                                                        | Visual Reference (example)                                                                                       |
|---------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Gloves                    | Rescuer safety                                                        |  Blue medical gloves | Gloves                                                                                                           |
| Phone (Virtual interface) | In-VR interface or voice command to simulate emergency call (112/911) | To contact emergency services and receive instructions                                                |  Virtual phone icon or screen |
| Soft cloth/padding        | Towel, jacket, or soft object                                         | Head protection                                                                                       | Soft cloth/padding                                                                                               |
| Watch/timer               | Visual clock interface                                                | Time the duration of seizure                                                                          | Watch/timer                                                                                                      |
| Emergency blanket         | Foil-type rescue blanket                                              | Prevent hypothermia                                                                                   | Emergency blanket                                                                                                |

## Evaluation and feedback

### Performance analysis:

- Cleared the area of hazards.
- Avoided restraining the victim.
- Protected the head safely.
- Timed the seizure accurately.
- Placed the person in the recovery position.
- Called emergency services promptly.

### Suggestion for improvement:

- Strengths and weaknesses are reported to the participant (e.g., "You responded well, but remember to time the seizure and keep the airway open after it ends.").

### Score and certification:

Participants demonstrating successful performance can earn a digital certificate of achievement.



## **GLOSSARY OF TERMS**

**Tonic-Clonic Seizure:** A seizure involving muscle stiffening (tonic) followed by rhythmic jerking (clonic).

**Generalized Seizure:** An event affecting both sides of the brain causing full-body convulsions and loss of consciousness.

**Convulsions:** Uncontrolled muscle contractions causing shaking or jerking movements.

**Recovery Position:** Side-lying position with head tilted back and mouth downward to maintain an open airway.

**Do Not Restrain Rule:** A core seizure first aid principle: never hold the person down during convulsions.

**Do Not Put Anything in the Mouth:** Placing objects in the mouth can break teeth, injure airway, and block breathing.

**Post-Ictal Phase:** The recovery stage after a seizure when the victim may be confused, tired, or unconscious.

**Seizure Timing:** Recording seizure duration; seizures lasting over 5 minutes require urgent medical support.