

Course materials (scenarios)



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Children: Head injury

EMERGENCY CALL

Narrator: A dispatcher received an emergency call about a 5yo. child that has fallen out of a window in an apartment block, downtown. In the afternoon, two brothers were playing in a room with the door closed. The parents, who were in another room, heard a child screaming. When they entered the room, the younger son was standing on the windowsill, lost his balance and fell out the window. The father ran downstairs to his son and immediately called emergency services. He informed the dispatcher that his son was lying unconscious on the lawn; "He's not moving, I think he might be dead" he said.

Dispatcher: Medical emergency, how can I help?

Father: Send an ambulance, my son is lying on the lawn and is not moving.

Dispatcher: Please calm down, sir. Tell me what happened.

Father: My 5-year old son has fallen out of a window.

Dispatcher: Please give me your address and the ambulance will be there in about 4 minutes. Do you know how to perform first aid on your son?

Father: What do I do?

Dispatcher: Please, kneel down next to him. Do not shake him or anything. Try calling his name.

Father: Michael! His eyes are closed. He isn't reacting! His ear is bleeding!

Dispatcher: Move your ear to his mouth and see if you can feel him breathing. Look at his chest and check if it's moving.

Father: Yes, I can hear it. Oh my God, he's breathing but it's slow and rattling.

Dispatcher: Do not move the boy, just hold his head and make sure he stays the way you found him. The ambulance should be close now.

Father: Yes, I can hear the siren.

Narrator: An emergency medical response unit arrives at the scene, with John as the team leader, and two paramedics Chris and Emma. On the way, the medics prepare themselves to assist in the situation.

ON THE WAY TO THE EMERGENCY

John: The dispatch form says we have an unconscious child who's fallen from height. The child probably has a head injury. It is also possible that the spine is injured, especially in the cervical region.

Emma: You're right. A kid's head is the heaviest and it hits the ground first after a fall.

Chris: Ok, a 5-year old, weight around 20kg. We need the Broselow Tape to measure the doses of medication and liquids to administer intravenously, though intraosseous injection may be necessary. We may also need the paediatric GCS to assess his consciousness.

Narrator: The medics know, that a healthy 5-year old has breathing frequency of 14-20 per minute, pulse 90-100 BPM and systolic blood pressure 90-100 mmHg. The knowledge will help them know where the child's parameters deviate from the norm.

Emma: OK, we have a paediatric oxygen mask, a self-inflating bag and an oxygen tank.

John: We'll need quick transport. See if we have everything for that.

Emma: There's a paediatric spine board with head stabilizers, a paediatric cervical collar and a thermal blanket.

John: And maintaining a patent airway is a priority.

Emma: We have a full set: endotracheal, nasotracheal and orotracheal tubes, and child-size stylets.

Chris: Have we got any splints?

Emma: No, but we'll handle it. Alright, we've arrived.

ARRIVING AT THE SCENE

John: Good morning. We're the EMS response team, we're here take care of your child. My name is John. What happened?

Mother: I don't know, I didn't see it. We were drinking coffee in the living room, when Peter, our older son started screaming. We ran to the other room, the window was open. I don't know, I didn't see anything. My husband ran downstairs and tried to help him. Enough with the questioning! What's with my son?

John: Calm down, we're doing everything we can. The medics are helping your son now. Can you help us by answering a few questions?

Narrator: The team leader quickly assesses the situation: the surroundings are safe, the child is injured, the parents are present and the police are securing the scene.

Emma: Do you consent to the administration of medical assistance? What's the boy's name?

Mother: Yes, we agree. Where's the doctor? Do you know what you're doing? Where's the doctor?

Emma: Don't worry ma'am, we're in touch with a paediatrician who specializes in emergency medicine. Is your son allergic?

Mother: Yes, he's allergic to cow's milk.

Emma: Is he allergic to any pharmaceuticals?

Mother: No, he isn't. Not that I know of.

Emma: OK, is he ill at the moment? Is he taking any medicines?

Mother: He drinks cod liver oil but that's it. No illness apart from a runny nose.

Emma: So, the boy's been healthy. When did he eat, do you remember? Can you recall anything unusual in his behaviour, anything that you'd noticed before the accident?

Mother: He ate about 5 hours ago and no, I hadn't noticed anything unusual before the accident.

ON SCENE MEDICAL CARE

Narrator: Emma has just finished the interview. John is conducting a preliminary body and consciousness assessment of the child. He gives instructions to Chris, who takes quick action.

John: The boy's unconscious, 3 points on GCS (eyes – 1pt, verbal – 1pt, motor – 1pt), no reaction to stimuli. The airway is partially obstructed. Breathing is slow and the heart rate is low. Chris, stabilize the head, put him in a paediatric cervical collar after I check his neck. Tracheal tube, five rescue breaths with Ambu bag, 100% oxygen, paediatric volume.

Narrator: John continues assessment of the boy. He looks at and feels the head and neck.

John: Anisocoria, the right pupil is larger than the left. The right ear is bleeding. I suspect damage in the cervical region of the spine.

Narrator: John examines the chest and stomach. He doesn't find any visible damage, abrasions, bruises or visible bone fractures.

John: The chest is stable ([he checks the stomach](#)), the stomach is soft. The boy is not reacting to the examination. The pelvis is stable, reacting properly to pressure and stretching.

Narrator: [The medic is examining child's arms and legs.](#)

John: Right lower limb trauma, open laceration, bone splinters visible on the right calf.

PATIENT CARE DURING TRANSPORT

Narrator: [John contacts a paediatrician via telephone.](#)

John: The boy was found lying on his back. He's unconscious, 3pts GCS. Here's the diagnosis after the initial examination: rattling breath, three breaths per minute, blue skin, capillary refill – more than 5 seconds. BP (blood pressure) undetectable. Serious bradycardia, carotid artery pulse – 37BPM. There's cranial trauma, suspected fracture of the base of the skull. Because of the fall from height, we also suspect cervical fracture and open right crus fracture. Immediate transport necessary. We're providing assisted respiration and performed chest compressions. Request for permission to administer adrenaline.

Paediatrician: Permission granted, adrenaline 0.2mg.

Narrator: [Paramedics move the boy to the spine board and load him into the ambulance.](#)

John: Emma, insert an IV, administer medication and 400ml HES fluid and control peripheral perfusion. Take two attempts, if failed Chris will insert an intraosseous injection. I'm connecting him to a heart monitor ([connects](#)). Connected. ECG indicates electrical heart activity of 37 BPM, the sinus rhythm is consistent with the electrocardiogram.

Emma: IV insertion successful. Adrenaline administered. HES 400ml bag connected.

Mother: What is happening with my son?

John: We're doing everything we can ma'am. He's still unconscious. We've managed to insert an IV and we're giving him fluids. The blood pressure is increasing, we can say that circulation has returned.

John ([is performing another assessment of the boy](#)): Michael, can you hear me? ([counts breaths, checks pulse, measures blood pressure](#)).

John ([contacts the coordinator again](#)): The child is still unconscious. BP - 60/50mmHg, Heart rate – 100BPM, O₂ saturation – 96%, respiratory rate – 3 every 10 seconds. We'll continue the emergency procedures, we're in an ambulance going to a paediatric injury treatment centre.

Paediatrician: Take him to the nearest sports pitch, 10 km. There's a HEMS helicopter waiting

for you. Good luck.

John (to the Mother): Please, come inside.

Mother: How is he? Why is he still unconscious?

John: We'll keep monitoring Michael, his consciousness and his breathing. He has a special tube in his throat that's helping him breathe. We'll examine him thoroughly again. We'll continue to support his respiration. It's called Ambu bag respiration with paediatric volumes of oxygen. We'll keep him connected to a heart monitor to control his heart rate, blood saturation, which is concentration of oxygen in the blood, and blood pressure. I'll also check his plantar reflex, blood glucose level by taking a drop of blood from a finger. In 10 km, we'll transfer to a helicopter which will take you and your son to injury treatment centre.

Children: Respiratory disease

EMERGENCY CALL

Narrator: A dispatcher has received an emergency call about a 10-year-old boy who suddenly started choking. His grandmother called emergency services and informed the dispatcher that her grandson could not breathe.

Dispatcher: Medical emergency, how may I help you?

Grandmother: Send an ambulance please, my grandson is choking.

Dispatcher: Please calm down madam and tell me what happened.

Grandmother: My 10-year old grandson suddenly started choking.

Dispatcher: Please give me your address and the ambulance will be there as soon as possible

Grandmother: My address is 21 Gerald Street, Newtown.

Dispatcher: Are you able to perform first aid on your grandson?

Grandmother: No, what do I do?

Dispatcher: Please, kneel down next to him, do not shake him, and try calling his name.

Grandmother: He's choking! His breath is so loud and I can hear horrible wheezes.

Dispatcher: Can you tell me if your grandson has any diseases and whether he has any allergies? Did he eat or drink anything before it started?

Grandmother: Oh my God, I'm so worried! I can't remember now.

Dispatcher: OK, just try to calm down. Leave your grandson sitting on the chair, loosen his shirt, and open a window. The ambulance should be close now.

Grandmother: I think I can hear the ambulance.

ON THE WAY TO THE EMERGENCY

Narrator: The ambulance crew is on the way to the scene, with John as the team leader, and two paramedics Chris and Emma. The medics prepare themselves to assist in the situation.

John: The dispatch form says we have a 10-year-old boy who suddenly started choking. We have no information about allergies, illnesses or food intake.

Emma: Hmm, it could be anything...

Chris: OK guys, a 10-year old weighs around 28kg. Get the Broselow Tape and let's measure the doses of medication and IV fluids. IO might be necessary. We may also need the paediatric GCS to assess his consciousness.

Narrator: The medics know that a healthy 10-year old weighs approx. 28 kg and has breathing frequency of 12-20 per minute, heart rate 80-100 BPM and systolic blood pressure 100-110 mmHg. The knowledge will help them know where the child's parameters deviate from the norm.

Emma: We've got a paediatric non-rebreather oxygen mask, a nebulizer mask, a bag-valve mask with reservoir and an oxygen tank, all check.

John: We will need quick transport, see if we have everything for that.

Emma: I'll check if we have a pulse oximeter .

John: Maintaining patent airway and saturation is a priority.

Emma: We've got a full set: endotracheal and oropharyngeal tubes, tube stabilizers and child-size stylets.

Chris: Are you guys ready?

Emma: Yes. We've arrived.

ARRIVING AT THE SCENE

Narrator: The team leader performs scene size – up. The scene is safe. The child is sitting on a chair. The grandmother is present.

John: Good morning. We're the EMS response team, we are here to take care of your grandchild. My name is John. What happened?

Grandmother: I don't know, it started so fast. I was in the kitchen when Peter started to cough. I came here, looked at him but he couldn't speak. God, he can't breathe! Look at him, his skin is turning bluish! What's happening?!

John: Calm down, we're doing everything we can. The medics are helping your grandson now. Can you help us by answering a few questions?

Chris: Do we have your permission to provide medical help?

Grandmother: Yes, I agree but maybe I should call his father?

Chris: Yes, it would be helpful.

Narrator: The women reaches the telephone and dials a number.

Grandmother: Hi Sam, Peter is sick! I called the ambulance, he can't breathe!

Chris: Can you ask his father if the boy has any allergies to medicines and whether he's taking any medication? Is he ill at the moment? Or does he have any chronic disease like asthma?

Grandmother: (on the phone) I'm so nervous, I don't know what to do. The paramedics want to know if Peter has any chronic diseases or allergies and if he's taking any medication.

Grandmother: (talking to the paramedics, after the phone call) Peter has asthma, now I remember!

John: So, he has asthma. When did he eat, do you remember? Can you recall anything unusual in his behaviour, anything that you'd noticed before he started choking?

Grandmother: He ate about 5 hours ago. I can't remember anything unusual before it started.

ON SCENE MEDICAL CARE

Narrator: Emma has just obtained SAMPLE history. John is performing an initial assessment and primary survey. He gives instructions to Chris, who takes quick action.

John: (to the boy) Hi, my name is John can you hear me? What is your name? If you can't speak just shake your head. (the boy shakes his head)

Narrator: John assesses the boy's pulse, checks CRT and attaches the pulse oximeter

John: The boy's conscious, 12 points on GCS (eyes – 4pt, verbal – 2pt, motor – 6pt). He can't speak, the airway is partially obstructed, breathing is fast 25/min so is the heart rate 120/min, saturation is low – 70%. His skin is cyanotic, cool and CRT is prolonged – 3 sec. (to Chris) Prepare the non-rebreather oxygen mask and start administering 100% oxygen 12 l/min. When you finish, prepare the nebulizer mask and salbutamol (*albuterol or other drug which is used or available in partners countries*)

Narrator: John continues assessment of the boy.

John: I hear wheezes during chest auscultation (applying stethoscope to the boy's chest), his blood pressure is normal (measuring blood pressure)

Narrator: John examines the boy's chest, stomach and limbs.

John: I don't see any major bleeding or any other injuries.

PATIENT CARE DURING TRANSPORT

Narrator: John contacts a medical coordinator via telephone.

John: 10 yo boy with asthma exacerbation. He's conscious, 12 points GCS. After the primary and partially secondary survey: the airway is partially obstructed, breathing is fast 25/min, saturation is low – 70%, his skin is cyanotic and cool, CRT is prolonged – 3 sec. BP (blood pressure) is normal. Stable tachycardia 120/min. 100% Oxygen is administered, flow 12 l/min. We have also prepared the nebuliser mask and salbutamol. We didn't find any major bleeding or injuries.

Medical coordinator: OK. Continue oxygen therapy and reassess saturation. If it doesn't increase administer salbutamol. Don't forget to finish secondary survey.

Narrator: The paramedics move the boy to the spine board and load him into the ambulance.

John: Emma, insert an IV, continue administering oxygen and control peripheral perfusion and saturation. I'm connecting him to a monitor. Connected. 12 lead ECG shows sinus tachycardia of 120 BPM.

John: Chris please prepare 250 ml of normal saline and start infusion as soon as Emma has inserted the IV.

Grandmother: What is happening with my grandson?

John: We're doing everything we can ma'am. We've managed to insert an IV and we're giving him fluids. We need to take him to hospital so you have to come with us.

John: (performing another assessment of the boy): Peter, can you hear me? (counts breaths, checks pulse, measures blood pressure). Do you feel any better? Please nod or shake your head. (the boy confirms, nodding his head)

Chris: (to the grandmother): Please, come inside.

Grandmother: How is he?

John: He's getting better. We'll keep monitoring his consciousness, breathing quality and frequency. He has a special mask with oxygen which is helping him breathe. We'll examine him thoroughly again. We'll continue to support his respiration. We'll keep him connected to a heart monitor to control his heart rate, blood pressure and saturation, which is concentration of oxygen in the blood.

Pregnancy and premature birth

EMERGENCY CALL

Narrator: A dispatcher received an emergency call about a 35-year-old pregnant woman who was travelling by car. She called the emergency services and said that she had probably gone into labour.

Dispatcher: Medical emergency, how can I help?

Pregnant woman: Send an ambulance to Main St., I've just started to give birth, I'm sitting in the car on the side of the road.

Dispatcher: Please calm down and tell me what is happening. Have you been in labour before?

Pregnant woman: Yes, this is my third labour. I have frequent, intense contractions and my waters have broken.

Dispatcher: OK, so you know what is going on. Don't forget about breathing. Turn on your emergency lights so the ambulance crew can find you.

Pregnant woman: I've already turned on my emergency lights.

Dispatcher: How frequent are your contractions? And how long do they last?

Pregnant woman: Every 3 minutes for about 1 minute.

Dispatcher: Alright, the ambulance is on its way.

Pregnant woman: Thank you. I was just on my way to the hospital. The baby is due tomorrow.

Dispatcher: Just try to calm down and breathe. Try to lie down on the back seat. The ambulance should be with you in a few minutes.

Pregnant woman: I think I can hear the siren.

ON THE WAY TO THE EMERGENCY

Narrator: An ambulance crew arrives at the scene, with John as the team leader, and two paramedics Chris and Emma. On their way, the medics prepare themselves to assist in the situation.

John: The dispatch form says we have a 35-year-old woman who has gone into labour. We have information that is her third labour. She has contractions every 3 minutes for about 1 minute and her waters have broken.

Emma: That means it may go fast and we should prepare to take care of the newborn.

Chris: I'll check the obstetric kit. OK, we have towels, sterile gloves, scissors, bulb syringe umbilical tape and umbilical cord clamps.

Narrator: The medics know that they may have to take care of two patients – the mother and the baby. After obtaining the woman's obstetric history and perineal examination at the scene, they need to decide whether to complete delivery in the field or transport the woman to the nearest hospital.

Emma: We should obtain her obstetric history like the number of pregnancies and deliveries. History of problems with pregnancy like vaginal bleeding, prior cesarean sections, high blood pressure, premature labour, premature rupture of membranes. We need to know of any current complaints like the onset of labour, timing of contractions, rupture of membranes or urge to push. Past medical history is also very important.

John: We may need another ambulance on the scene. We will also need quick transport.

Emma: I'll take care of the perineal examination.

John: So I'll take care of the fetus and the newborn care. We will need a newborn thermal wrap and blankets.

Emma: Chris, check the adult and paediatric resuscitation kits.

Chris: (looking into the kits) All checked. Are you guys ready?

Emma: Yes. We've arrived.

ARRIVING AT THE SCENE

Narrator: The team leader performs a scene size-up. The scene is safe. The woman's car is parked on the side of the road with emergency lights on. She's lying on the back seat of her car.

John: Good morning. We're the EMS response team, we'll take care of you. My name is John. Can you tell us what happened?

Pregnant woman: I'm pregnant and I have just gone into labour!

John: Have you ever given birth before?

Pregnant woman: Yes, this is my third pregnancy.

John: And when are you due for this birth?

Pregnant woman: I'm due tomorrow. I was just on my way to the hospital.

John: OK, when did your contractions start?

Pregnant woman: About 20 minutes ago, I think. I have frequent, intense contractions every 3 minutes for about 1 minute and my waters have already broken. Actually, I have a contraction right now. Please hurry up it hurts a lot!

Chris: (looking at watch) It's 11.45, tell me when it stops.

John: Have you had any complications during this pregnancy? Like high blood pressure, diabetes or vaginal bleedings?

Pregnant woman: No, I haven't had any problems and the baby is also healthy.

Pregnant woman (to Emma): The contraction has just stopped.

Chris: (looking at his watch) 1 minute 10 seconds.

John: Are you currently taking any medications?

Pregnant woman: No, I'm not taking any medications at the moment.

John: Do you have any allergies?

Pregnant woman: No, I have no allergies.

John: When was the last time you ate or drank anything?

Pregnant woman: I had breakfast about four hours ago. Please hurry up, another contraction has just began and it hurts a lot!

Chris: (looking at his watch) So, we have a contraction every 3 minutes. (to the pregnant woman) Tell me when it stops.

Pregnant woman: OK, I'll tell you, but please hurry up!

ON SCENE MEDICAL CARE

Narrator: The paramedics move the women to the ambulance.

John: If you don't mind, I need to perform perineal examination. (to Chris) Check her vital signs, please.

Pregnant woman: Do whatever you need. The contraction has just stopped.

Chris: OK. (starts checking vital signs – breathing rate, heart rate, blood pressure; connects pulse oximeter, auscultates lungs, checks CRT)

John: [looking at his watch] 1 minute 10 seconds. (lifting dress and looking at woman's crotch) I have to check for vaginal bleeding and amniotic fluid leakage also presence of meconium. Leopold's maneuvers helps us to determine the location of the fetus in the uterus. We are not allowed to perform an internal vaginal examination but I have to check if the parts of the body like head, foot, arm or cord are not present in the birth canal.

Narrator: John has just completed a SAMPLE history. Chris performed the perineal examination and completes the obstetric history. Chris finished the initial assessment.

Chris: She's conscious, 15 points on GCS (eyes – 4pt, verbal – 5pt, motor – 6pt), breathing rate is normal 20/min, heart rate 120/min, saturation is normal – 96% skin and CRT is normal, blood pressure is 110/70 mmHg (to John): prepare non-rebreather oxygen mask and start to administer 100% oxygen 12 l/min. We have to make sure that the baby and mother are constantly oxygenated. (John puts an oxygen mask on woman's face)

John: (to pregnant woman) This is for you and the baby, breathe deeply.

Chris: I haven't found any vaginal bleeding or meconium. No body parts are not present in the birth canal. Contractions occur every 3 minutes and last 1 minute and 10 second.

John: We have active labor but not imminent delivery so I see no need to complete it in the field. The nearest hospital with a maternity ward is only a few minutes away from here. (to Chris) Chris check the baby's heart rate, attach cardiac monitor electrodes to the mother's chest and turn the monitor on. (Chris puts stethoscope on the woman's stomach, attaches electrodes and turns on the heart monitor)

John: During the transport we should place her in left lateral recumbent position and insert an IV.

Chris: OK, I'll take care of that.

John: We are ready to go.

PATIENT CARE DURING TRANSPORT

Narrator: John contacts a medical coordinator via telephone.

John: We have a 35-year-old woman in active labor. She's conscious, 15 points on GCS (eyes – 4pt, verbal – 5pt, motor – 6pt). Breathing is normal 20 breaths per minute, heart rate 120 beats per minute, saturation is normal – 96%, skin and CRT are normal, blood pressure 110 over 70. No

signs of vaginal bleeding nor meconium. There are no body parts present in the birth canal. Contractions occur every 3 minutes and last 1 minute and 10 seconds. We started oxygen therapy and placed her in the left lateral recumbent position. We've just left the scene.

Medical coordinator: OK, continue oxygen therapy. I'll notify the nearest hospital with a maternity unit. It's about 5 minutes away from you.

Pregnant woman: The contraction has just stopped.

John: OK, don't worry. We should be in the hospital in about 5 minutes.

Pregnant woman: I'm worried about my baby. Please tell me what's going on!

John: We are taking you to the nearest hospital with a maternity unit, they are expecting us.

Pregnant woman: How is my baby doing?

John: The baby's fine, don't worry.

Pregnant woman: Another contraction has just started and it really hurts!!!

John: Please calm down and breathe. I know it hurts you.

Pregnant woman: It hurts so much!!!

John: I know but please breathe. We are very close to the hospital now.

Adults: Heart disease

EMERGENCY CALL

Narrator: The EMS dispatcher receives a call about a 56-year-old man who has suddenly woken up in the middle of the night with severe chest pains.

Dispatcher: Medical emergency, what is your emergency?

Patient: I need help! I was asleep and woke up with severe chest pains and I can't breathe!

Dispatcher: Please calm down. Where are you?

Patient: I am at home!

Dispatcher: OK, can you please tell me where you live? I need your full address.

Patient: I live in Newton Street 22, 3rd floor, apartment 27.

Dispatcher: I am going to send an ambulance. Is anyone with you?

Patient: No, I live alone.

Dispatcher: What is the pain like? When did it start? How much and where does it hurt?

Patient: It started in the middle of the night when I was asleep. It's hurting me a lot now and it feels like a big fist in my chest. My left arm is really hurting as well and I can feel the pain spreading around my back.

Dispatcher: Ok don't worry an ambulance is on its way to you. It should be there in a minute.

ON THE WAY TO THE EMERGENCY

Narrator: An ambulance crew – António and Manuel – are on the way to the emergency. The paramedics discuss procedures and prepare to assist the patient.

Manuel: The dispatcher says we have a 56-year-old man with severe chest pains. The patient reported that the pain woke him up. His left arm is hurting and the pain is spreading around his back.

António: If he is conscious and is time-and-place oriented we will check the pain score: pain type, onset, location, intensity, and duration.

Manuel: Yes, you're right. I'll do that as soon as we're there. I hope he's still conscious.

António: We'll see when we get there. If he isn't, we will need to start cardiopulmonary resuscitation (CPR) using the external defibrillator.

Manuel: OK, before I do anything else, I'll check the automated external defibrillator, the electrocardiogram, and ECG electrodes.

António: I'll check if we have everything for oxygen therapy. We'll need an oxygen mask, the self inflating resuscitation bag with oxygen reservoir, the non-rebreather mask, and a portable oxygen tank.

Manuel: We might also need oropharyngeal and nasopharyngeal airways, tracheal tubes, and suction equipment. Will you check if we have that, please?

António: I'm sure we will also need the vital signs monitor and intravenous infusion sets.

Manuel: OK, I'll see if we have that.

António: I think we're ready.

Manuel: We've arrived.

ARRIVING AT THE SCENE

Narrator: Ten minutes later the ambulance arrives at the scene. The paramedics enter the building and find Mr. Vasco lying on the couch.

António: Hello? Mr. Vasco?

Patient: Yes, come in. I'm over here. I am in a lot of pain.

António: I understand that the pain woke you up, is that right? Can you tell me exactly what happened and where the pain is?

Patient: I was asleep when I suddenly woke up with a severe pain. It felt like a gripping in my chest. That was over two hours ago.

António: And can you feel the pain only in your chest?

Mr. Vasco: No, it's in my left arm as well.

António to Manuel: Manuel, please check the vital signs. I need to ask Mr. Vasco a few more questions.

António to Mr. Vasco: Do you have any illnesses and are you currently taking any medication?

Mr Vasco António: Yes, I take medication for hypertension.

António to Mr. Vasco: And have you been hospitalized before?

Mr Vasco António: No, I have never been in hospital before.

Manuel to Mr. Vasco: When did you last eat or drink?

Mr. Vasco: I had dinner about 7 last night.

Manuel to Mr. Vasco: Have you ever had this kind of pain before?

Mr. Vasco: No, never.

Manuel to Mr. Vasco: On a scale of 0 to 10, can you tell me how severe the pain is – where zero is no pain and 10 is the most severe pain you have ever experienced.

Mr. Vasco: I think it's about 5.

ON SCENE MEDICAL CARE

Manuel to António: Ok, his vital signs are: respiratory rate: 18 breaths per minute. O2 Sat: 92 per cent, blood pressure: 180 over 68, heart rate: 86 beats per minute, blood glucose level 120 milligrams per deciliter.

Narrator: According to this protocol a doctor is not needed at this time

António to Manuel: What do you think? It seems to me that it might be a case of Acute Myocardial Infarction. Let's give him 12 litres of oxygen per minute with a non-rebreather mask - we need to get him up to 94-98% saturation.

Manuel to Antonio: Antonio, you will need to do a 12-lead ECG

Narrator: Antonio attaches the leads to the man's chest and performs an ECG

Manuel to Antonio: I'll insert an IV and administer 4 mg of morphine to relieve the pain.

Antonio to Mr. Vasco: Mr. Vasco, looking at the electrocardiogram I can see some changes to the way your heart is working which makes me suspect that that you are having a heart attack.

Mr Vasco to Antonio : it is serious?

Antonio to Mr Vasco: Yes it's serious, but treatable. It's called an Infarction. We're here to help and we will do everything we can.

Manuel to Antonio: I have administered 4 mg of intravenous morphine.

Antonio to Manuel: Since we are dealing with infarct signs and supra ST deflection we need to ask for permission to administer aspirin, nitrate and clopidogrel.

Antonio to Mr. Vasco: can you now tell me how severe the pain is, on the same scale as before of 0 to 10.

Mr. Vasco: I think it's about 4.

PATIENT CARE DURING TRANSPORT

Narrator: Antonio loads the patient to the ambulance.

Manuel to medical coordinator: We have a 56-year old male with a chest tightness type of pain, radiating to the left arm. It started about an hour ago. The electrocardiogram has revealed ST-segment elevation in V5 and V6. I have already sent the data to you.

We have given the recommended medication. The patient is relieved of pain right now with a score of 4 on the pain scale.

Narrator: While in the ambulance the paramedics discuss Mr. Vasco's vital signs and possible treatment.

Manuel to Antonio: Please check the vital signs again.

Antonio: Respiratory rate: 18 breaths per minute, O2 Sat: 97%, blood pressure 140 over 70, heart rate: 86 beats per minute, BGL- 120 milligram per decilitre

Antonio to Mr. Vasco: Can you now tell me how severe the pain is, on the same scale as before from 0 to 10?

Mr. Vasco: I think it's about 3 now.

António to Mr. Vasco: Do you smoke?

Mr Vasco to António: Yes.

António to Mr. Vasco: How many do you smoke a day?

Mr Vasco to António: About 20

Antonio to Mr. Vasco: How long have you been smoking for?

Mr. Vasco: Since I was 16.

Narrator: After asking about his health, the paramedics would normally ask further questions about family medical history as background information in preparation for treatment in the hospital.

The elderly: Stroke

EMERGENCY CALL

Narrator: In Canhede, during a family get-together and after lunch, a 70 year old woman begun to lose consciousness. The son, seeing that something was wrong, called 112.

Dispatcher: Medical emergency. What is your emergency?

Son: My mother is not well. We were watching TV and she started talking in a funny way. Then she collapsed.

Dispatcher: How old is your mother? Is she breathing normally?

Son: She's 70 years and yes, she's breathing normally.

Dispatcher: Please give me your exact address and your phone number. We'll send an ambulance immediately.

Son: Is there anything else I can do?

Dispatcher: Make sure your mother is lying on her side and that she continues to breathe. If she worsens before the ambulance arrives, contact us again.

ON THE WAY TO THE EMERGENCY

Narrator: The ambulance crew – paramedic Dan and John – are on their way to the patient's house. They prepare themselves by discussing emergency procedures and by checking equipment.

John: Let's see... The dispatch form says we have a 70-year-old female who collapsed but regained consciousness shortly afterwards. She's breathing but seems disoriented.

Dan: What do you think it might be? I'd say it's either hypoglycemia or a stroke.

John: It could be a syncope because of the temporary loss of consciousness. She could have stood up too quickly. In the worst case scenario it could be a stroke. But I'm not sure. We'll see when we get there.

Dan: You're right. Let's see what equipment we need. What do you think we should do first when we arrive?

John: We should check the patient's vital signs. Please check the blood pressure monitor, the pulseoximeter and the blood glucose meter. I'll take the emergency response kit.

Dan: Yes, sure. I agree with you. We need her vital signs first. Once we have her respiratory and heart rates, saturation, blood pressure and blood glucose level, we'll contact medical operator to see where we should give her.

John: Can you also take the LP12 defibrillator and the oxygen therapy kit please? We'll need the oxygen tank, the oxygen mask and the nasal cannula. We might also need an IV infusion set.

ARRIVING AT THE SCENE

Narrator: Five minutes later the ambulance crew arrives at the scene.

John: Can you tell me exactly what happened?

Son: My mother was watching TV and she suddenly started talking in a funny way. It was really strange.

John: What's your mother's name?

Son: Alice.

John: How long ago did this happen?

Son: About 30 minutes ago. We had just eaten lunch and came in here to watch TV. Then it happened.

John: Hello Alice, can you hear me?

Alice: Hellorrrr,

Dan (to John): It sounds like dysarthria. This slurring of speech often occurs after a stroke due to weakness or paralysis in the muscles controlling the mouth and facial movements or the respiratory system.

John: Yes, you're right. Can you check her vital signs please?

John (to the son): Does your mother have any illness? Is she taking any medication? Has she been in hospital before?

Son: No, she has always been healthy and has never been in hospital. She's not taking any medications either. As I say, she was fine until about half an hour ago.

Dan: John, I've got her vital signs: respiratory rate: 14 breaths a minute, O2 saturation: 92%, blood pressure: 190 over 70, heart rate: 80 bpm, BGL (blood glucose level) - 170 mg / dl

John: Great. I'll perform a neurological assessment.

John: Alice, could you smile please? Can you tell me what you had for lunch?

Alice: Mearrrrrrt and potarrrrrrtoes

John (to Dan): She has asymmetric movements of the face and dysarthria.

John: Alice, can you close your eyes? Now, raise your left arm... And your right arm... now your right leg... and your left leg.

Dan: She can't extend her limbs on the right side.

John: Let me see your eyes, Alice.

Narrator: John checks Alice's pupils using a diagnostic flashlight.

John (to Dan): Her pupils don't react to light.

Dan: Her SPO2 Sat is pretty low, so I suggest we increase her oxygenation to over 94%. I will put on an oxygen mask.

John: Yes, do that.

John: Alice, do you feel any pain?

Alice: Hooomeeee

Narrator: Often confusion arises in addition to dysarthria. According to the standardized CPSS (Cincinnati Pre-hospital Stroke Scale) which emphasizes facial droop, arm drift and abnormal speech the paramedics suspect a stroke.

ON SCENE MEDICAL CARE

Narrator: John contacts Medical Operator.

John: Good afternoon, John here. We have a 70 year-old female, previously autonomous. She has dysarthria, face-droop and decreased muscle strength to the right side. It started about 40 minutes ago.

Medical operator: Ok, I have the data and will pass it on to the doctor.

Doctor: Good afternoon. I see you're with a suspected stroke victim. You have observed the criteria for green way, right?

John: Yes, there are deficits and it occurred about 40 minutes ago.

Doctor: Let us transport her to Coimbra. I will contact the stroke team in Coimbra to check that they are prepared. I'll contact you again when this has been done.

John: Your mother may be experiencing a stroke. I have been talking to the doctor and we will take her to a specialist stroke unit in Coimbra.

John: Dan please move Alice to the ambulance. I need to gain venous access.

Dan: Ok, I'll monitor her ECG and other parameters.

PATIENT CARE DURING TRANSPORT

Doctor: Good afternoon again. I have spoken with the stroke team and they are waiting for you.

John: Let's continue to perform neurological assessments on Alice and monitor her vital signs.

Dan: Ok, her vital signs are very similar to what they were before. Her O2 level is pretty low, so I suggest we increase her oxygenation to over 98%.

John: I agree, let's check again Alice's CPSS scale. Her face still droops on the right side.

Dan: Alice, can you try lifting you right arm, please? I see, you still have difficulties. Can you smile again, please?

Dan: Very little change in CPSS. Let's prepare the non-rebreather mask and administer oxygen.

Infants: Head and limb injuries

EMERGENCY CALL

Father: I need an ambulance, my daughter is sick.

Dispatcher: Tell me exactly what happened?

Father: She is sick. She's pale and languid. In the morning, she fell out of her swing in the house. I thought that she was alright. She cried a bit and fell asleep. After she woke up I noticed that she was pale and irritable.

Dispatcher: I am sending an ambulance to you right now. Please tell me your address.

Narrator: Chris, Dave and Joyce were called to a house where a 7-month old baby was injured. The child fell out of an in-house swing, around 60cm (2ft.) above the floor. The infant probably hit the swing's bar and then the floor. The mother witnessed the event. The child vomited, though remained conscious. According to the father she calmed down and fell asleep for 2 hours after falling out of the swing. After she woke up, the infant was pale, languid and cried a bit.

ON THE WAY TO THE EMERGENCY

Narrator: Joyce is the team leader. Chris and Dave are team members. Before they arrive, they plan a course of action.

Chris: The child is only 7 months old, she's so little. A venepuncture is going to be difficult. We may need to go for intravenous or intramedullary administration. Chris, can you administer an intraosseous catheter when we're in the ambulance? Are you prepared? Have you got the gear?

Dave: We have an automatic intraosseous tool for children.

Joyce: What else do we need?

Chris: Personal protection gear - medical gloves, a medical sheet to lay the child's leg on, an infusion tool, infusion fluid, an intraosseous needle connector and a skin disinfection agent.

Joyce: We don't know if she's still conscious. So the paediatric GCS scale will be useful to assess the state of her consciousness. Chris, Dave, do you both remember what it includes?

Chris: The Paediatric Glasgow Coma Scale helps to assess the level of consciousness of a child or an infant. The results of applying the paediatric GCS scale is presented on a chart and as the sum of all points. GCS scale is also used on adults, after adjustments have been made.

Joyce: Dave, can you remind me what PTS is?

Dave: PTS stands for the Paediatric Trauma Score: These are the criteria for checking if a child with a body trauma qualifies for emergency transport to a specialist centre for injured children in the US.

Joyce: Great, let's check what gear we're taking with us. We'll need the airway clearing and oxygen therapy kits.

Chris: What about the medical response kit?

Joyce: Yes, and make sure we have the cylinder with oxygen and the ambu bag. We will also need the monitor to see the child's heart rate, blood pressure, ECG and temperature.

Dave: Take the Pedi-Pac immobilization system. The paediatric collar and Kramer splints won't be needed.

ARRIVING AT THE SCENE

Narrator: We are now at the apartment. The father is present. The baby is lying in a crib. The mother is taking care of her older child and is not present at the start. The overall impression is bad, as the child seems inert. She doesn't move and doesn't react in any way to new people in the room.

Father: When she woke up, she was pale, apathetic and irritable. My wife was very concerned and that's why I called the ambulance.

Joyce: May I examine the child? I need to assess her level of consciousness. (The man nods and remains silent). What's her name?

Father: Ann

Joyce: Ann, Ann. Hello Ann. (The paramedic speaks loudly and touches the child's forehead). Ann, can you see Daddy? Ann, can you tell me if it hurts?

Narrator: The baby cried. Joyce assesses the airway clearance, counts the breaths and checks the child's pulse on the carotid and brachial artery.

Joyce: There's a contusion on her scalp around the right parietal and temporal bones. She also has a bulging fontanelle which suggest increased intracranial pressure.

(to father). Sir, what exactly happened?

Father (upset): I'm telling you! She fell out of the swing. What's wrong with my daughter?

Joyce: She has a possible skull and brain trauma. Although there are no indentations on the skull there might be a build-up of blood above the dura mater in her brain.

Her right forearm is swollen and there's a visible bruise. She cried when I was examining it. It's often symptomatic of a fracture. Her other arm and her legs seem to be ok. I suspect a forearm fracture, but that's not the problem for now. I'm more concerned about the head injury.

Did you notice anything else after she woke up?

Father: She vomited, here are the marks, though she hasn't eaten anything since morning. After she was sick she calmed down and fell asleep. We thought that it was over.

Joyce (to father): How many times did she vomit?

Father: Twice. Once before she fell asleep and once after she woke up. Like I said, she was very pale and listless.

ON SCENE MEDICAL CARE

Joyce: Dave can you stabilize her head and neck? Attach the pulse oximeter and administer 100% oxygen - and use the bag valve mask.

Dave: Should we move her to the paediatric spine board?

Joyce: Yes, get ready and move her.

Dave: Is the BVM enough for proper perfusion?

Joyce: Her breathing rate is 8 per minute, which is too low. The norm for a child under the age of one is 20 breaths per minute. The breathing is shallow, pulse 60 beats per minute. The child's unconscious.

Joyce: Dave can you check her blood pressure? See if it changes and be ready to treat hypotonia. We need to take her to hospital straight away. In this condition she needs immediate surgical intervention. Chris, can you insert an intramedullary catheter when we're in the ambulance?

Dave: Does she need tracheal intubation?

Joyce: Intubation of a baby with head trauma is too difficult for paramedics. It would take too long. Time is precious when it comes to saving children. We need to shorten the procedures on site to a minimum.

Narrator: Joyce, the team leader, finished a quick trauma evaluation and identified life-threatening conditions. Now it is necessary to transport the child to a paediatric trauma centre. In the ambulance, Joyce contacts a medical coordinator. She sits in the driver's cab so the mother can't hear the conversation.

Joyce (to coordinator): We're transporting a 7-month child with a craniocerebral trauma.

COORDINATOR: What's the mechanism of the injury?

Joyce: The father claims that she fell out of the swing.

COORDINATOR: Should we notify the police and social services?

Joyce: We're probably not dealing with inappropriate childcare. The trauma matches the described mechanism of injury. The parents seem to be very concerned and they phoned immediately after the child's condition deteriorated.

COORDINATOR: What is the initial diagnosis after the examination of the child?

Joyce: She's stable at the moment. Other symptoms are pale skin, increased intracranial pressure, contusion of the scalp around the right parietotemporal area. The child is languid, muscle tone is lowered. She was dozing during the examination. I suspect epidural hematoma. There is also the setting sun sign: she has an upwards gaze with the eyes appearing driven downward. I could see some sclera between the upper eyelid and the iris.

COORDINATOR: The parents seemed to call in late. Doesn't that surprise you?

Joyce: Their first thought was that the child was fine. They're not doctors.

COORDINATOR: Is there anything else I can do for you?

Joyce: If the child is to get to the paediatric care centre quickly, we'll need a HEMS.

PATIENT CARE DURING TRANSPORT

Joyce: We're continuing to administer oxygen. We need to introduce fluids carefully. We'll connect her to a heart rate monitor and watch ECG, skin colour and temperature, the count and quality of respiration. We will also monitor her blood pressure.

Dave: What will be accomplished by monitoring ECG?

Chris: We'll get a record of heart rate and information about whether it is too fast or too slow for the child of this age. We'll also see if it's steady or irregular. We'll see the width of the QRS complexes.

Dave: Will she be examined at the hospital?

Chris: Yes, a doctor will do it. He will also conduct a detailed interview.

Father: Why is a head trauma so dangerous to a child? Can you explain it to me? Why is her condition so serious, since she was alright after she fell?

Chris: The most common complication of a head trauma in an infant is a chronic subdural hematoma. It forms as a result of the rupture of the tiny blood vessels between the surface of the brain and the dura mater. Blood mixes with the cerebrospinal fluid and gradually builds up on the surface of the brain. There is an increase in the head circumference, pressure on the scalp and a bulge on the crown. A child manifests a headache by showing annoyance, crying and vomiting. Exactly as in the case of your daughter.