

SAFETY

simulation for medical practice

SIMULATION APPROACH FOR
EDUCATION AND TRAINING
IN EMERGENCY

Bradyarrhythmia

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Summary

Scenario Description	5
Learning Target	5
Description	5
Participants.....	5
Scenario Briefing	6
Briefing (everyone)	6
Additional Briefing (individual positions)	6
Case Briefing (role-players).....	6
Script Sim Nurse/Co-Instructor	7
List of Material.....	7
Set-Up Room.....	7
Set-Up Simulator.....	7
Scenario Saver	8
How to react if the medical problem is not identified	8
How to react if the medical problem is identified too quickly	8
Other comments, material needed for savers (e.g. white coat).....	8
Scenario End Criteria	9
Scenario ends when	9
Timing	9
Simulator Set-Up	10
Abstract	11

Scenario Description

Learning Target	Description	Participants
<p>Medical:</p> <ul style="list-style-type: none"> - Diagnosis of a patient with symptomatic bradycardia - Treatment of a patient with unstable bradycardia - Differential diagnosis of bradycardia (underlying cause) <p>CRM:</p> <ul style="list-style-type: none"> - Call for help - Use the 3Cs to communicate (citing names, clear instruction close the loop) - Situation awareness (be aware of the initial situation and re-asses) - Share the mental model and gather team feedback - Organise team <ul style="list-style-type: none"> • Distribution of roles • Distribution of tasks 	<p>Where:</p> <ul style="list-style-type: none"> -Emergency department <p>Who:</p> <ul style="list-style-type: none"> -Patient with symptomatic bradycardia 	<ul style="list-style-type: none"> -Medical student 5th or 6th year or resident 1st year -Nurse student 4th year

Notes:

This scenario can be performed either by the whole team in different roles (Medical and nurse role) or one participant (medical or nurse role) and an actor.

Scenario Briefing

Briefing (everyone)	Additional Briefing (individual positions)	Case Briefing (role-players)
<p>A 65 year-old male is brought to the emergency department with a complaint of asthenia and dizziness. He has a past medical history of hypertension, Diabetes Mellitus and hyperuricemia. Medication: enalapril and insulin</p>	<p>Emergency doctor (instructor, optional): -You are a senior doctor at the emergency department. You will brief and ask the participants to take care of the case. Then, you will leave to take care of another patient. Afterwards, your role is to assist the participants if they ask for help and to rescue the scenario if necessary.</p> <p>Nurse assistant: (confederate) - You are nurse assistant at the emergency department. You will be in the room when the participants arrive. Your role will be to help the participants specially to guide them with material and medication</p>	<p>Medical student or resident: -You are working in the emergency department. You are asked to assess a patient that has been brought with a complaint of asthenia and dizziness. You will work with a colleague nurse.</p> <p>Nurse student: - You are working in the emergency department. A patient with a complaint of asthenia and dizziness just arrived. You are asked to take care of him. You will enter the room with the medical student. In the room there is a nurse assistant</p>

Notes:

- This scenario briefing is for 1 or 2 students (two medical, medical and nurse, nurse, and nurse).
- If the only participant is a medical student, then, the nurse assistant will be replaced by an emergency nurse that will remain in the scenario from the beginning helping the student (confederate). Her duties would depend on the country the case is intended to be performed.

Script Sim Nurse/Co-Instructor

List of Material	Set-Up Room	Set-Up Simulator
<p>Simulated Patient:</p> <ul style="list-style-type: none"> -Preference: Manikin and monitor with remote control. -Other options: Actor with monitoring, basic manikin (task training manikin) with monitor. -MUST: Allow patient communication with learners -TIPS: Patient dressing code according to age (ex. Glasses, wing) <p>Specific material: Apart from the standard emergency room motoring-material-equipment</p> <ul style="list-style-type: none"> -Point of care (with lactate) -Equipment for peripheral intravenous cannulation -Medication: atropine, isoprenaline, dopamine, epinephrine, morphine, glucagon -Defibrillator -ECG with Mobitz type II-AV block and III degree AV block 	<ul style="list-style-type: none"> - When the participants enter the room, the patient is lying in supine position. The confederate (nurse-nurse assistance) is already in the room. - The patient: <ul style="list-style-type: none"> - Spontaneous ventilation in air room - Not monitored - Has not a peripheral intravenous line -Outside the room (ready only on request): - defibrillator/pacer <ul style="list-style-type: none"> • 12-lead ecg showing the ecg for each stage: 2nd degree Mobitz type II AV Block • 3rd degree AV • Pacer-ecg defibrillator - 	<p>When the scenario starts, the patient is not monitored, has neither an intravenous line nor oxygen.</p> <p>The patient is conscious. Be aware that any problem or delay in the reply of the patient to the participants' questions may look like the patient is in worse condition than the planned.</p>

Notes:
If there is not x-ray machine available, please consider sending participants out of the room while simulating the x-ray.

Scenario Saver

How to react if the medical problem is not identified	How to react if the medical problem is identified too quickly	Other comments, material needed for savers (e.g. white coat)
<p>If the participant/s are not able to reach a diagnosis or if they reach a diagnosis but they don't treat the patient accordingly, the confederate can give hints and guide the participant through all the steps for the resolution of the case. The patient will not die.</p> <p>The confederate can guide with questions (hidden hints): "What does mean?" "Is it also possible to do ... ?"</p> <p>If the hints are ignored, help is also possible with more direct comments: "Last time I saw that, the team did..." (only correct hints!)</p> <p>And finally, the confederate can fake a phone call to the consultant and say afterwards: "The consultant is coming. He told us to do..."</p> <p>And finally, the confederate can fake a phone call to the consultant and say afterwards: "The consultant is coming. He told us to do..."</p>	<ul style="list-style-type: none"> - A good performance should not be slowed down unnecessarily! - When the scenario is solved, regardless of the timing, the cardiologist (confederate) will enter the scenario and the participants will summarise the case. If something relevant is missing the confederates will point it out 	<ul style="list-style-type: none"> -If the participants are starting a treatment or doing an action that might be harmful for the patient, the confederate will give hints. -In worst case a team member in the role of the consultant emergency medicine will enter the scenario to reconduct the situation. -A radio connection between the team in the control room and the confederate should exist. -Two real mobile phones are highly recommended to call the cardiologist from the scenario.

Scenario End Criteria

Scenario ends when ...	Timing	Expected (Key) actions
<p>-It ends when all the following statements are true:</p> <ol style="list-style-type: none"> 1. The diagnosis of unstable bradycardia secondary to 2nd degree Mobitz type II AV Block or 3rd degree AV block is reached 2. Treatment with transcutaneous pacemaker is initiated 3. Call the cardiologist to reevaluate the case and eventually place a temporary intravenous pacemaker. <p>Then the emergency doctor (familiar) will enter the scenario and ask the participants for a handover/ briefing of the situation (SBAR, ABCDE and SAMPLER)</p> <p>Then, the cardiologist would say, "OK, thank you very much for taking care of our patients, I will continue from now on"</p> <p>These can be achieved by the participants on their own or with help of the scenario saver</p>	<p>The scenario is planned to last between 10-15 minutes. Instructors could help if the previous points have not been achieved within the stipulated time.</p>	<ul style="list-style-type: none"> -Diagnosis of bradycardia - Search for (reversible) causes - Understanding the need for therapy - Planning therapy - Recognizing the deterioration - Call for help - Start therapy for instable patients - Recognizing non-response to medical therapy - Initiating pacing - Recognizing the success - Search for (reversible) causes - Plan further interventions - Plan the transfer to adequate ward/ department/laboratory - Handover

Notes: Don't let the patient die

Simulator Set-Up

	Phase 1 Start	Phase 2 Deterioration	Phase 3 Pacing
Vitals	HR: 40 /min Heart rhythm: Mobitz type II AV block BP: 89/ 50 mmHg SpO2: 97%, RR: 18 /min Temp: 36 °C Blood sugar: 180mg/dl Eyes open/blinking	HR: 32 /min, Rhythm as before BP: 75/35, SpO2: 90%, if given oxygen raising to 94% RR: 28 /min GCS: 15 Eyes closed	HR: as per Pacemaker, rhythm external PM BP: 110/6 (if analgesia) 140/90 (if no analgesia) SpO2: 95% (99%with oxygen) RR: 15 /min Eyes open
Text for the patient	He will answer to all questions (name, age, medication) correctly but slowly and complaining that he doesn't feel well. -If he is asked why he has been brought to the emergency room he will answer that since yesterday he doesn't feel well, he is tired and his head turns. He has no other complaints . Past medical history of hypertension, Diabetes Mellitus and hyperuricemia. Medication: enalapril and insulin	Disoriented, responding slowly	If analgesia provided – ok, relieved. If no analgesia – unpleasant, pain at electrodes
Other info	Critical actions: Overdosage of epinephrine		Critical actions: No analgesia is provided
Management during scenario	If participant asks for administration of atropine, isoprenaline, dopamine or epinephrine, it will be done but the hemodynamic and mental status won't change	Trigger to continue – call external pacer	

Abstract

Learning Target:	Diagnostic and treatment of a symptomatic or unstable bradycardia
Description:	<ul style="list-style-type: none"> - Signs and symptoms recognition (anamnesis and physical examination) - Basic monitoring - Supportive treatment - Definitive treatment is suggested
Participants:	Medical student 5 th or 6 th year or resident 1 st year and/or Nurse student 4 th year
Case Briefing:	A 65 year-old male with a past medical history of hypertension, Diabetes Mellitus and hyperuricemia is in the emergency department with a bradycardia becoming worse secondary to 2 nd degree or 3 rd degree AV block.
List of Material:	<ul style="list-style-type: none"> - Emergency room basic monitoring, treatment, and lines. - Manikin with possibility of simulated voice - Clothes and wig to create an impression of a 65yo male -Point of care (with lactate) --12-lead-ecg print outs: 2nd degree Mobitz type II AV Block or 3rd degree AV -external pacer/defibrillator - Specific medication for treatment of bradycardia
Set-Up Room	<ul style="list-style-type: none"> - Emergency room -Patient lying on bed, no monitored, without oxygens and lines -A confederate in the room (a nurse-nurse assistance). Next of kin (optional)
Set-Up Simulator:	Vital signs remote control. Initially, patient is not monitored. Once patient is monitored, she is hypotensive and desaturating
Scenario Saver:	Cardiologist (confederate)
Scenario End Criteria:	Achieving the diagnosis of cardiogenic shock due to 3 rd degree AV block. Initiate treatment with transcutaneous pacemaker
Management during Scenario:	From the control room. It is paramount to have a way to communicate with the confederate.
Other:	Limitations <ul style="list-style-type: none"> - Depending on the manikin could be: Eye blinking, sweat, pallor, cold skin

