

Simulation of pace maker implantation for medical imaging professionals training

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Aims and objectives

The learning process in a simulation context envisages the students to integrate a realistic situation probable in their professional future, in which they feel the difficulties, try to overcome them and acquires a real perception of the working environment. The greatest advantage of learning in a simulation context relies on the promotion of deep knowledge, since the student effectively participates in the scenario, instead of only being a passive element in the learning process [1].

In this work, a simulation of a pace maker implantation with imaging support requirement took place at the Clinical Simulation Centre of the University of Aveiro, "Simula", with the purpose of training future medical imaging professionals. The main objectives were to enhance and develop technical, problem-solving and interpersonal skills as well as to implant teamwork values [1].

Methods and materials

The simulation included a briefing, scenario and debriefing [2,3].

The group of students was introduced to the context at arrival. Two students volunteer themselves to participate actively in the procedure while the remaining were allowed to attend remotely through the internal video system. None of the students had previous contact with such scenario neither in clinical environment nor in the practical classes. The volunteer students sign an informed consent for video recording.

The simulation centre, "Simula" (figure 1), has several specific features for this purpose: an operating room (figure 2), video system, a high fidelity full-body mannequin simulator mimicking the production of vital signs and allowing their manipulation through a control station hidden from the scenario, vital signs monitors and anesthetic equipment. The control station was operated by a teaching member according to the goals of the simulation.

The characters in the scenario were performed by the teachers who played the roles of anesthetist, cardiologist surgeon, nurse and radiology technician (figure 3), who were responsible for establish the procedure dynamics. The students were informed that they would would play the rule of trainees of medical imaging technicians in a curricular internship.

Images for this section:



Fig. 1: Control station to manipulate mannequin's vital signs from which it is possible to see the scenario.

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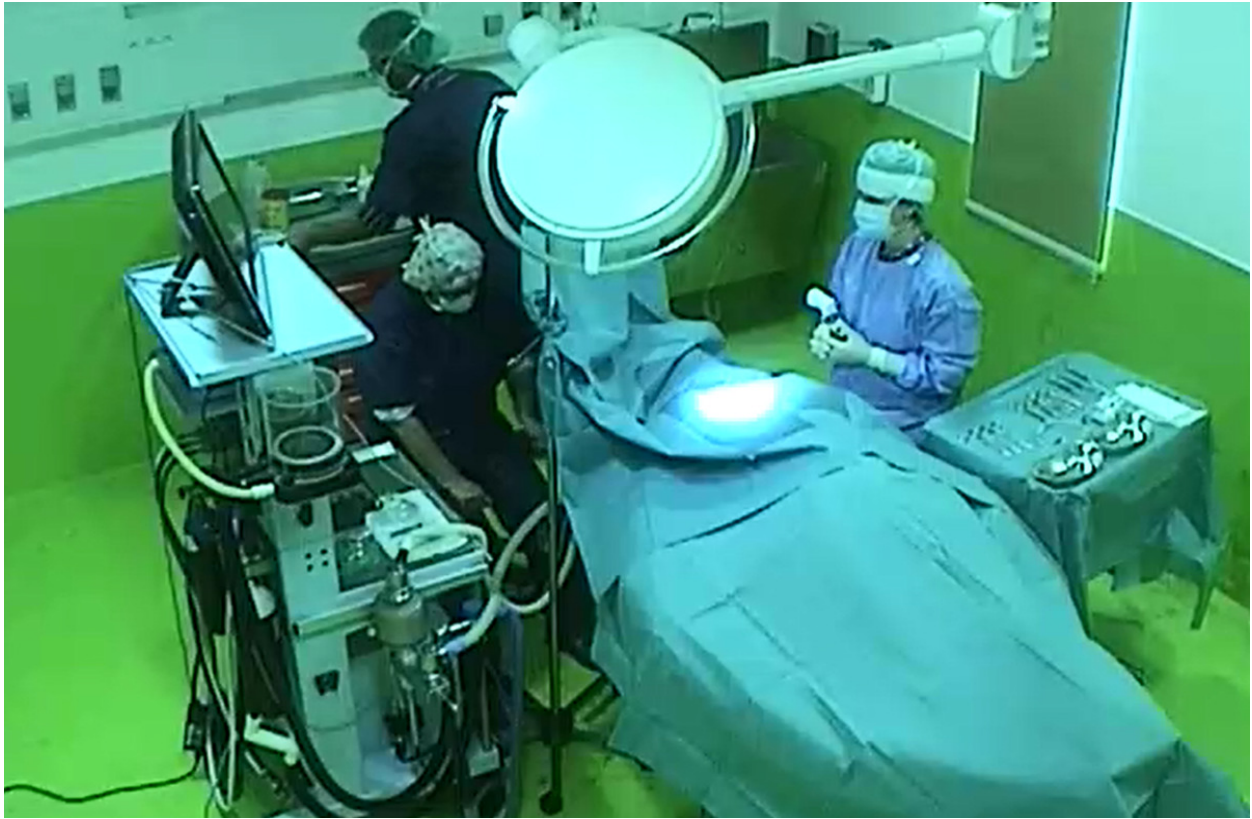


Fig. 2: Scenario showing the operating room with the patient prepared and hidden by the sterile drapes, the anaesthesia equipment and vital signs monitors.

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Fig. 3: Characters of the scenario: anaesthetist, surgeon, radiology technician and nurse.

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Results

During the simulation, the trainees needed to manipulate the C-arm and provide clinical useful images to the cardiologist surgeon. For this, they needed to interact with the remaining team and obey the radiation protection and aseptic rules (figure 4 and figure 5). Some planned difficulties were implemented, for example, it was asked to the trainees to accelerate the procedure and to provide images of several anatomic structures, which required to move rapidly the C-arm.

The last and essential part of this work is the debriefing, in which a group reflexion was done to enhance the positive references and refer points to improve in the students performance. The discussion was mediated by the teachers, who suggested crucial ideas.

Students considered the simulation teaching valuable and it opened pathways to effectively discuss and reflect about their performance, analysing the difficulties and improvements to be done.

Images for this section:



Fig. 4: Medical imaging trainees handling the C-arm and attempting to place it in the correct position.

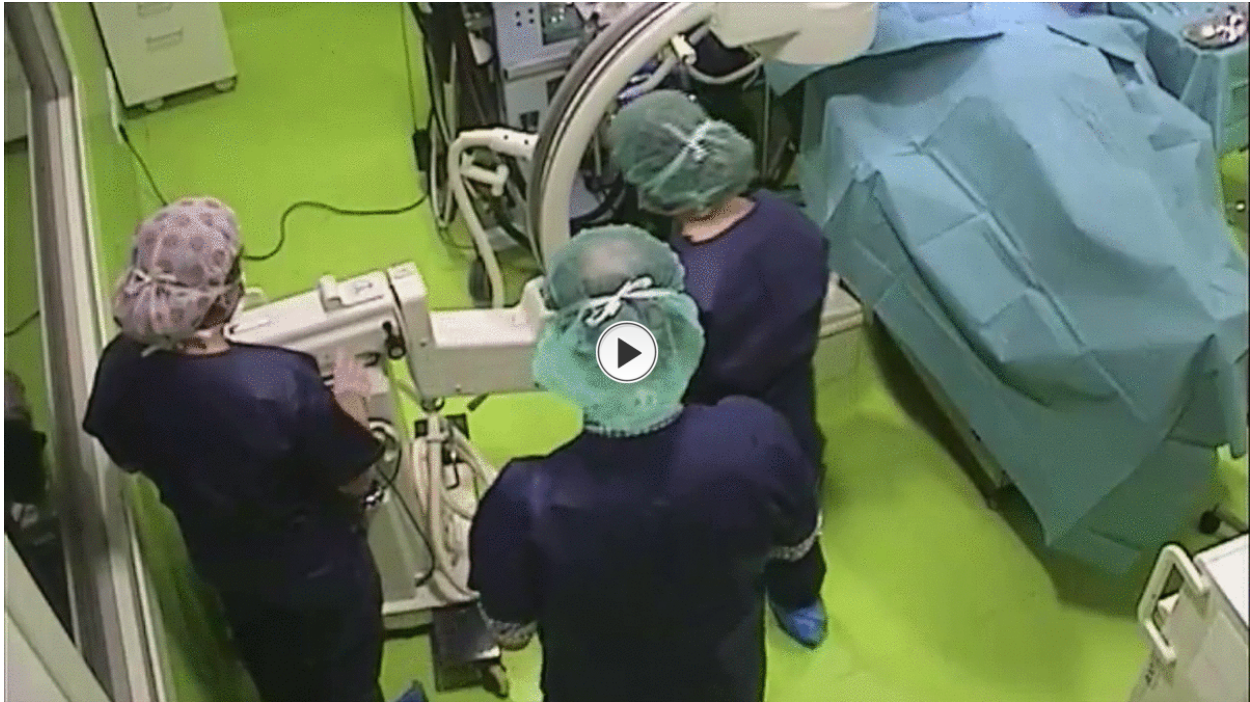


Fig. 5: Medical imaging trainees interacting with the remaining team taking aseptic rules into consideration.

Conclusion

The students considered the simulation valuable for their education and it effectively allowed engaging the students to reflect about their performance (including difficulties and improvements to implement) and also for further explanations, discussions and knowledge transmissions.

Personal information

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