

Medical Education Through Experiential and Peer Learning

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Abstract

The article describes a pilot experiment addressed to first year students who need to become familiar with and able to use basic medical maneuvers early in their hospital practicum. The experiment took place in the University of Medicine and Pharmacy “Gr.T.Popa” Iasi, Romania. The main idea of the project is to design a component of academic medical education relying on motivating students, peer learning, and on a course-book including teaching videos created by the tutor, designed as a didactic tool in a low-budget skills development center.

Aims of the project: to implement in academic medical teaching a design of learning basic medical skills, relying mostly on peer education and which is capable to train freshman students to practice and acquire basic medical skills, necessary for hospital practicum before the knowledge to justify these medical maneuvers has been learned in the clinical years.

Method: a teaching/learning system was conceived in a patient holistic approach using low-budget resources. The design was based on reviewing state-of-the-art literature in order to create a system of basic medical interventions and protocols strongly based on the latest scientific medical evidence and also tailored to existing local conditions. Accompanying videos were created for the students to illustrate both the maneuvers and the medical communication associated with them.

Results and Discussion: a book of protocols with accompanying videos was elaborated as a learning/working tool, a skills development center was organized and didactic dummies were developed using low-cost solutions. Available human resources were organized in a system of peer-education for maximum efficiency in a “do – receive – assess – feedback – teach - coach” concept of experiential education.

Conclusions: the system of peer educational involvement described has succeeded in creating a functional, work-based experiential learning environment, using a low budget and limited human resources.

1. Introduction

The best educational situation consists of a student directly practicing a learning situation while being observed and coordinated by a person who capable of offering him pertinent feedback on how the intended task was performed.

The fact that as soon as they finish their first year at the University of Medicine and Pharmacy “Grigore T. Popa” Iași all medical students have to attend an intensive summer medical practicum that involves hands-on interaction with patients creates the obvious imperative of having to provide them with efficient education and training in the fundamental skills.

Such a system of education was first implemented in our University as early as 2011 mainly through the elaboration of a handbook that allows students who work in teams of three to experience the alternative postures of performer, patient and evaluator.

2. Training template

The system of training relies on inexpensive solutions to reproduce the medical environment and simulated body parts necessary for trainees to safely rehearse a procedure in which skills acquisition is requested.

However, the most important component of this system was obtained through in-depth study of current literature and associated scientific evidence, resulting in a collection of protocols, i.e. sequences of steps to be followed for the correct and standardized accomplishment of a medical procedure.

All the protocols start with a brief evaluation of the presence of vital signs (state of consciousness, movements, speech, breathing) in order to be able to clearly distinguish among various cardiorespiratory arrest situations.

In the case of patients with maintained vital functions, this is followed up by a short greeting and a personal introduction. "Good afternoon. My name is, I am the doctor/nurse who will examine you today."

Very important, the patient's identity must be strictly confirmed using two elements of identification: name and date of birth. It is essential to ensure the privacy of the patient and to inform him about what procedure will be performed, to describe the steps, and to explain how he may contribute to it and why the procedure is important for him. It is also vital to carry out assessment for compliance with the given health problem and any existing allergies, to medically wash hands throughout the maneuver and to cover all the evidence-based recommendations provided by current studies.

Each protocol ends with detailed information the patient's future medical schedule, including the date when he needs to be reexamined. And before leaving him for another medical task the trainee needs to make sure the patient is appropriately positioned (e.g. adjustments to the bed), with his/her personal objects (e.g. mobile phone, book, crossword puzzle etc.), a glass of water and the remote control for the medical aid system appropriately placed within reach.

3. Discussion of results

Results clearly show that the use of book as a teaching tool is justified by the insertion for each sequence of actions of certain points that are gained or lost, depending on student capability to correctly perform the protocol. It goes without saying that some of the steps are designed as essential and failure in their realization leads to considering student performance as unacceptable.

An example of such a protocol describing capillary glycemia measurement is presented below.

Measurement of capillary glucose levels (in fact the glucose concentration at the peripheral level of an extremity – in a mixture of blood from capillaries / arterioles / venules and interstitial fluid) – used when frequent determinations are necessary or when wanting to avoid venous puncture blood collection		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	P
1.	Rapid evaluation of the presence of vital signs (<i>state of consciousness, movements, speech, breathing</i>) <i>Vital functions maintained</i> <input type="checkbox"/> ; <i>cardiorespiratory arrest</i> <input type="checkbox"/> Good afternoon. My name is I am the doctor/nurse who will examine you today.	0	3	5	
2.	Can you, please, confirm your name And your date of birth Thank you	ESSENTIAL			
3.	Ensure a private space for examination (<i>single bed ward, curtains, screen etc.</i>) I shall determine the value of your blood glucose level, your glycemia, by means of a device – the glucose meter (<i>explain the action to be performed</i>)	0	1	3	
4.	It is a maneuver which involves a small prick in the pulp of the finger (<i>explain what the maneuver consists of</i>)	0	1	3	
5.	It is very important for you to be relaxed and calm (<i>explain how the patient can contribute to determination</i>)	0	1	3	
6.	The value of the glycemia is an important parameter of your medical condition (<i>explain why the examination to be carried out is useful</i>)	0	1	3	
7.	Have I succeeded well in explaining the procedure? Maybe you would like to ask me something more about it?	ESSENTIAL			
8.	Do you have any idea of what the value of your glycemia is in general? (<i>evaluate the patient's perception of his/her medical condition and of his/her interest in health related aspects</i>)	0	3	6	
9.	Are you aware of any allergies you might have? Maybe rubber-made products? (<i>evaluate the likelihood of an allergy to latex gloves</i>)	0	3	6	
10.	Do you agree with taking blood samples? (<i>evaluate the patient's personal convictions regarding the collection of biological products</i>)	ESSENTIAL			
11.	Evaluate the patient's medical sheet from the point of view of:	0	5	9	

	- the recommendations for the determination of the capillary glycemia (<i>time, connection with food intake, connection with insulin intake</i>) - the associated diagnoses (e.g. <i>coagulopathy</i>), the paraclinical parameters (e.g. <i>thrombocytes < 150000, INR < 1,5</i>) and the concomitant medication (e.g. <i>Sintrom, Trombostop, Aspirin, Plavix etc.</i>) – in order to evaluate the risk of extended bleeding			
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38.	What do you think? Will you be able to determine your glycemia on your own at home? If you need me to give you more explanations, please do not hesitate to ask me.	0	1	3	
39.	Put the glucose meter components back into the transport bag.	0	1	3	
40.	Use a pad dipped in sanitary alcohol to decontaminate the pieces of furniture that were used during the determination. Take off the previously used gloves by throwing them into the infectious, non-sharp waste container. Wash hands.	0	1	3	
41.	One needs to ensure the patient's safety (<i>adjust the bed at an inferior height level, lifting the lateral limiters</i>) and to make sure he/she can easily reach his/her personal objects (e.g. <i>mobile phone, book, crossword puzzle etc.</i>), the glass of water and the remote control for dialling the medical service. Give details about the following medical schedule and the time when the patient will be reexamined).	0	1	3	

Total score: 200	1		%
	2		%
	3		%

Legend: ○ - unfulfilled criterion; ◐ – partially fulfilled criterion; ● – completely fulfilled criterion
(according to column P)

No	Date	Hr	Student name	Group	Series	Year	Specialisation	Glycemia (mg/dl)	Relation with food intake	Signature

Accompanying videos were created for the students to illustrate both the maneuvers and the medical communication that is associated with them.

In the first hour of a four-hour period of daily training, four days a week, a coordinator (usually a more experienced student interested in helping younger colleagues through their journey at the simulation center, or practicing nurses or teachers) moves from one team to another demonstrating and explaining the procedure. In this system, one coordinator can supervise four stations, spending 10 – 15 minutes at one station.

Students organize their work by shifting between the postures of examiner – patient – evaluator during 45 minutes - 1 hour. After this first hour, the coordinator will stamp each student's book on the corresponding row in a table containing the list of all the procedures and initiate the shift between teams and stations. Each of the teams leaving their station will explain to the coming team what they have learned about a particular procedure while the team coming to a station will also share their newly acquired knowledge on how to perform the protocol from the station they just left. During this exchange of experience and gained knowledge both teams are monitored and observed by the coordinator who thus has an overview of the achievements of students at the station and might even intervene to correct some aspects identified as less clearly understood.

4. Conclusions

The remaining three hours of the day's work continue in the same manner resulting in a system of peer-education based on a "do – receive – assess – feedback – teach - coach" concept of experiential education that has proved to be highly operational in our experience.

Overall, the system of peer educational involvement described has succeeded in creating a functional, work-based experiential learning environment using a low budget and limited human resources.

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