

# Basic skills for outpatient surgery in medical graduation

## *Habilidades básicas para cirurgias ambulatoriais na graduação médica*

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### A B S T R A C T

Medical students must have domain of basic surgery skills before starting more advanced stages of surgical learning. The authors present a practical and reproducible system of operative techniques circuit, idealized and often applied to the fourth year medical students of a private educational institution. This method has enabled accurate assessment of students' skills, improving their performance and preparing them for more advanced stages of the surgical learning.

**Key words:** Teaching. Education, Medical, Undergraduate. Education, Medical. Ambulatory Surgical Procedures. Aptitude.

### INTRODUCTION

Studies show that, in general, surgical teaching in the classroom is accompanied by formal and informal methods combined with activities in outpatient clinics, operating rooms and wards, relying mainly on the observation and implementation of practical procedures through proper and experienced supervision<sup>1,2</sup>.

Molds, sponges, mannequins, simulators, virtual reality, films, interactive videos, software, games, responsible use of animals, cadavers, human tissues, sutures and knots lab and surgical techniques workshops are auxiliary educational resources for teaching-learning-assessment with ethical, effective bases and with recoverable costs in the medium and long term<sup>2,3</sup>.

In Brazil, the curricular guidelines for undergraduation recommend forming a general practitioner able to perform clinical and surgical initial emergency procedures and basic outpatient care ones<sup>1</sup>. Given the extreme importance of surgical techniques for medical practice, this article aims to present a proposal to implantation of a surgical skills circuit for students at the beginning of the school year, held in a private education institution teaching hospital in Curitiba, Paraná, Brazil.

### SURGICAL TECHNIQUES CIRCUIT

#### Context

The medical school in question has achieved prominence on the national scene due to its education

program, teacher training, academic management and structural support provided to student training. During the third year of the course, students receive surgical training through lectures, experimental procedures in the operating room and extension courses for development of surgical technique principles. In addition, since the beginning of graduation they are introduced to the basic health units and other health care environments where they can experience routines, conducts, and attitudes necessary for future profession<sup>4-6</sup>.

The Discipline of Outpatient Surgery<sup>2,5</sup> is offered in the fourth year of Medicine for classes of 50-60 students, divided into smaller groups of 10 to 12 students for practicing, aimed at providing the student the knowledge essential to the diagnosis and treatment of frequent and important surgical diseases. The lectures are held in the teaching hospital and the practices developed in the clinic, operating room and wards, and in each class the student played a different role.

#### Circuit Preparation

The educational planning was based on surgical discipline infrastructure existing in the teaching hospital (Figure 1). We held prior meetings with the coordination, teachers, nursing staff, residents and the class representatives to discuss the issue, content, objectives, strategies, resources, assessment and records. We set up a list of surgical permanent and consumption material, defining what was to be held and used in each room, which was named "station". For circuit sequence of activities, we used as infrastructure a taps bench, three operating rooms and the resource room (Figure 2).

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The proposal was sent in advance by digital media for students, stimulating study and review of the technical textbooks, atlases and electronic resources. At the beginning of the semester, there was a general meeting in the classroom for presentation of the most important elements of the stations and clarification of doubts. As an incentive we offered one credit on the practice grade of the first bimester for those who voluntarily completed the circuit and assessment.

### Stations proceedings

The circuit was organized in a practical test fashion, with fixed time and performed in the operating rooms of the discipline at the university hospital (Figures 1 and 2). Each station was equipped with the listed materials, which were rapidly replenished by nursing as needed. The

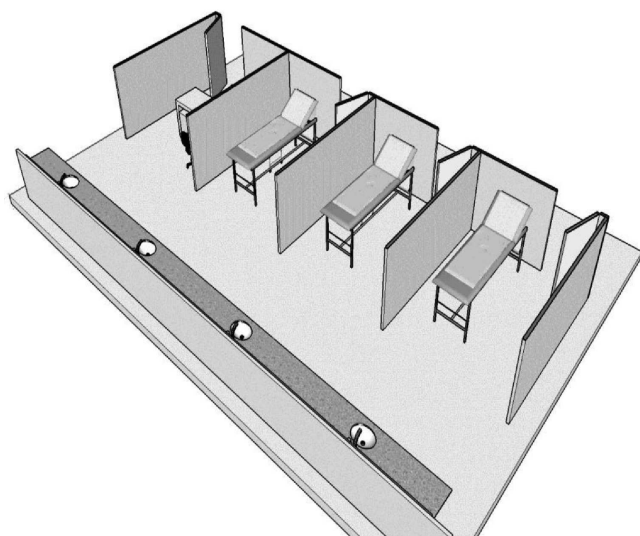


Figure 1 - Perspective of the infrastructure of Outpatient Surgery Discipline in the university hospital.

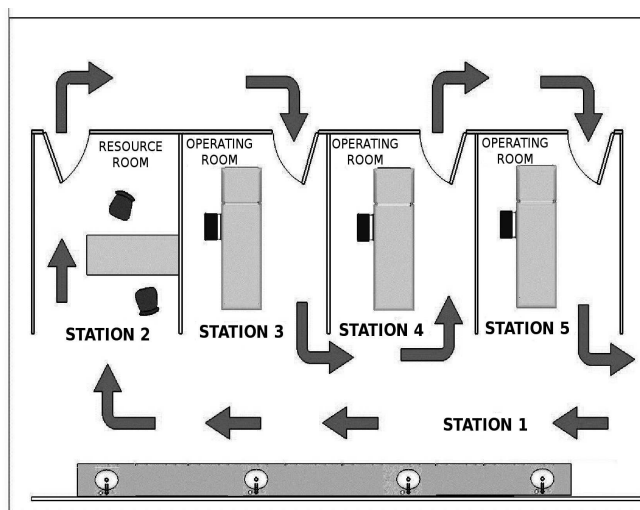


Figure 2 - Schematic drawing of the surgical techniques circuit.

time available for the student to perform the activity was ten minutes, marked in a timer to allow evaluation of five students per group.

Station 1 held hands brushing and the station 2, scrubbing. In station 3, an senior-monitor worked as a patient, and for the needlestick actions planned at stations 4 and 5, were used oranges. Supervision was carried out by three surgery professors and two residents.

### Assessment criteria

We analyzed Cognitive (knowledge), psychomotor (skills) and affective (attitudes) aspects considered key for surgery, broken down by station according to Table 1.

The student performance was evaluated using an illustrated instrument with the Likert scale<sup>7</sup> (Table 2). After the execution of each stage, the feedback session was held, the technique being repeated by an expository and demonstrative method of the correct surgical gesture by the supervisor, followed by demonstration and simulation by the student.

## DISCUSSION

The development of appropriate surgical technical skills involves the perception of their application in the reality in which we live and the learner's willingness to commit to continuous exercise of the surgical art to develop skills, improve accuracy and refine details<sup>2</sup>. This circuit aimed at screening cognitive, psychomotor and affective domains of the students who were beginning the fourth year of Medicine, identifying difficulties and facilities in relation to surgical techniques, mapping points for strengthening and ways to overcome challenges inherent to surgical activities.

The planning of this strategy explored the students' expected prior knowledge and helped to review, clarify and standardize operating procedures that should be checked systematically. The didactic actions set specific goals and guidelines to be achieved during the course of outpatient surgery.

Research shows that the Simulation-Based Medical Education (SBME) can provide consistent learning and has been used in urgency and emergency medicine<sup>8</sup> and in the prevention of infections related to health care<sup>9</sup>. The proposed circuit combined three categories of learning: exposure, exploration and simulation<sup>10</sup>. This diversity of methods tried to reach for different students within the same group, evaluate, level, adjust the teaching plan, adapting strategies and content, and also reduce, directly and indirectly, failures and cost of wasted time and material in the weekly surgical activities of the discipline.

This new architecture in the evaluation process also served to integrate theory and practice, giving priority to the dynamic methods for review, correction, structuring, strengthening and updating of surgical expertise.

**Table 1 -** Knowledge, skills and attitudes tested in each circuit station.

SURGICAL SKILLS CIRCUIT	KNOWLEDGE	SKILLS AND ATTITUDES
	What the student should know	What the student should do
STATION 1	Infection prevention notions	Surgical hand scrubbing
STATION 2	Surgical garment notions	Using cap, mask and goggles. Putting apron and sterile gloves
STATION 3	Surgical instrumentation notions	Putting fields on the table and on the patient, preparing turban, checking cautery and lights, recognizing and using instruments
STATION 4	Physiology and anesthesia notions	Inserting and removing scalpel blades, removing anesthetic from the vial, performing local anesthesia, using antiseptics, suturing and assembling the needle holder
STATION 5	Basic knowledge of anatomy and surgical techniques, prescription and medical documentation	Incision and marking for pathology, hemostasis, basic suturing and knots, applying dressing, discarding sharps, checking prescription, histopathological examination request, surgery description of the operating room discharge.

One of the advantages of the circuit putting students a in practical activities setting to mobilize knowledge, articulate skills and attitudes in view of their duties and responsibilities. The multitasking performance way introduced in this proposal intended to raise awareness of the importance of the field of surgical techniques in the development of the individual and collective assistance to the community, with fewer errors<sup>11</sup> and more accuracy, and, above all, to encourage students' skills, increase patient safety and prevent adverse surgical events<sup>12-14</sup>.

However, there are precautions to be taken when using this circuit. One of them refers to the fact that while the basic techniques are essential, the success of the operation depends on a set of factors related to the surgical team, the patient and the surrounding environment<sup>2,15</sup>. As limitations of this method, we can list the student anxiety, fear of exposing weaknesses in front of colleagues / teachers and fatigue by the apparent reproduction and repetition of techniques, although isolated acts were not equal. Another aspect is the common sense of the supervisor to manage

**Table 2 -** Instrument used to evaluate medical students during the surgical techniques circuit<sup>7</sup>.

DIAGNOSTIC EVALUATION		LIKERT SCALE				
OBJECTIVES PROPOSED FOR EACH STATION		5	4	3	2	1
1	Hand scrubbing and resourcefulness					
2	Putting apron and gloves					
3	Putting the table fields, fields on the patient, preparing turban, checking cautery and surgical lights, using instruments.					
4	Inserting and removing scalpel blades, removing anesthetic from the vial, performing local anesthesia, using antiseptics, suturing and assembling the needle holder					
5	Incisions and marking for pathology, hemostasis, basic suturing, dressing, prescription and filling paperwork for surgery description, histological examination, and operating room discharge.					
<p>LEGEND: 5 = Fully satisfactory; 4 = Satisfactory; 3 = Fair; 2 = Unsatisfactory; 1 = Fully unsatisfactory.</p>						
<p>Date: / /</p>						
<p>Evaluator name: _____</p>						
<p>Student's name: _____</p>						

time, enabling a favorable learning environment. In addition, as in other areas of health, the teaching staff need to be trained, integrated, cohesive, communicate clearly, and receive support and resources to achieve the proposed objectives.

On the other hand, there is awareness that evaluation is a complex and multidimensional process and it would not be possible at the time to deepen the matter of assessment of what has been internalized by the student. However, this learning experience sparked debates about the role of the institution, the professor, the student and society in the teaching-learning-assessment process<sup>1,3,10-13</sup>.

It is noteworthy that in the Department of Ambulatory Surgery, professors keep up to date and research resources, techniques and tools to better understand students (initial or diagnostic assessment), follow learning during the teaching process (continuous, training or procedural assessment) and globally analyze results (final or summative evaluation) to add more quality. Hits and

misses are used for improvement of methods, tools and logistics activities.

It can be inferred that this proposal has achieved success by offering knowledge integration opportunities gained from previous cycles of the Medical School and enable analysis of some techniques and skills necessary to perform basic surgical procedures. Its improvement can

awaken in professors and students the satisfaction of new discoveries and achievement of more meaningful knowledge in higher education.

In conclusion, this surgical skills circuit may constitute an evaluation resource for students and add benefits in the outpatient surgery teaching-learning process for medical undergraduates.

## R E S U M O

*Estudantes de Medicina devem ter domínio de habilidades básicas de cirurgia antes de iniciarem etapas mais avançadas no aprendizado cirúrgico. Os autores apresentam sistema prático e reprodutível de circuito de técnicas operatórias, idealizado e frequentemente aplicado aos alunos do quarto ano médico de uma instituição privada de ensino. Este método tem permitido avaliação precisa das habilidades dos estudantes, aprimorando seu desempenho, e preparando-os para etapas mais avançadas do aprendizado cirúrgico.*

**Descritores:** Ensino. Educação de Graduação em Medicina. Educação Médica. Procedimentos Cirúrgicos Ambulatoriais. Aptidão.

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