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# **SURGERY: EDUCATION FOR FOREIGN STUDENTS AND OF FOREIGN SURGEONS-INTERNS WITH USE OF MODERN TEXTBOOK AND MEDICAL SIMULATORS**

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## **INTRODUCTION AND GOAL.**

Such statement of a question, the higher medical education of independent Ukraine to return to the solution of a difficult pedagogical task - urgently and systemically to pass from classical methods of teaching of subject matters to post-classical that would allow at catastrophically accruing volume of medical information various organizations' and administrative and medical (preventive, diagnostic, medical, rehabilitation), and also scientific genesis to turn it into knowledge of the student, and the theoretical knowledge received by the same student, to transform to his professional skills and abilities.

All this together outlines the importance of the scientific and methodical research executed by us and does it actual in own contents. Such system and methodical transition would allow forming at the same time among medical students and motives to aspiration to study, to ability and desire to work, investigate and learn.

Taking into account that the level of qualification of the doctor is in the first place in various gradational system of educational societies it's understood the necessity to improve the quality of the doctor in institutes of higher education, in which directed implementation of the credit-module system to the educational process [3-5, 8-11].

Preparation of doctors of the general practice is the principal task of the medical institution of higher education, and therefore the proper teaching of surgery in the whole complex of other disciplines will create conditions for quality medical practice doctor in the future, especially for those professionals who plan to work as surgeons in around world of countries.

The doctors of the general medical practice tasks determinates basic requirements of scope of knowledge and practical skills for graduating of foreign student of institute of higher education of IV level of accreditation: goal-directed methodic algorithm of questioning of the patient (getting anamnesis), physical examination, substantiation of provisional diagnosis, determinate algorithm of additional methods of investigations with analysis of received results, differential diagnosis, forming clinical diagnosis, substantiation of treatment program and its implementation [7, 15-17].

In preparation of the student replacement of an estimated vector in the control of knowledge over existing volumetric parameters (an estimation on offset and examination) - before management and quality assurance of training will be powerful at studying discipline on each practical employment, adhering to the unified scheme with attraction of the developed textbooks.

The organization of educational process according to Bologna Convention giving to us to reorient this form of a passive method of training of students, actually from the lecture - informative to individually - the differentiated personal form, where ideology of lections transition from the educational technology "to drive in of knowledge" to technology "the self-education organizations" medical students. And for of foreign the intern-surgeons it's important to mastering of surgical manipulation and stages of surgical interventions in treating the most common surgical diseases or providing an emergency assistance in case of emergency conditions.

Development of modern surgery is impossible without modern techniques, including laparoscopic technology, so it's necessary to prepare medical interns to work on equipment that meets the time.

This requires to reconstruct the process of teaching surgery both students and medical interns towards a positive effect - mastering the full range of theoretical knowledge and practical skills with the help of modern equipment.

## **MATERIALS, METHODS AND PROCEDURES.**

### **The aim of the study.**

To implement the system of planning, monitoring and evaluation of the education quality for a real degree of assimilation of foreign students with specific components of the program during the academic year of surgery training and discipline for module “Abdominal surgery” in general based on the cumulative number of ranking points for the European Credit Transfer System (ECTS) [12-17].

This will improve the quality of learning discipline among the four-year of foreign students of enrolled this year, and develop common indicators for professionally-oriented exam after 6 year of study to get a general level of theoretical and practical knowledge and skills of foreign physicians interns of surgery.

The structured, multifactor planning of the educational process and implementation of various forms of staging control were conducted. Based on the standard curriculum and learning plan was created the Working program that regulates specific activities by teachers and students to achieve as a theoretical and practical knowledge required for this sequence of technological resources and action items using the credit-module system.

The calculated threshold standards levels of education (sum of estimates after the module translates the 200-point scale ECTS) and communicated to students to stimulate their enthusiasm for learning to the maximum level.

Main objective of this passive method of training – lectures, is formation of an orientation basis for further assimilation by students of a training material, then when a source in this method of training is the word of the teacher that directly reflects its language of culture pedagogical professionalism. Besides, today lecture - as the passive method of study strengthened by such methods of presentation as an illustration (tables, schemes, presentations and so forth) and demonstration (slides,

video movies).

It is important to note that in the course of application of a lecture method in the course of training students act as "object" of study - as passive listeners who have to acquire and recreate a lecture material which moves them the teacher - a source of knowledge.

### **Object and methods of investigation.**

The Department of Surgery № 1 (in 2017 – 95 years founded) of the State Organization “Dnipropetrovs’k Medical Academy Ministry Health of Ukraine” (in 2016 – 100 years founded) was conduct structured, multiple planning of the study process and the use of different forms of the staging control.

Taking into account the Standard program of the discipline, curriculum, working program for the department was create the specific actions by teachers, of foreign students and of foreign interns of surgery to achieve theoretical and practical knowledge, necessary resources and sequence of technological operations with the use of credit-modular system [1-5, 6].

Thus, there were additionally created classes for training with medical mannequin and simulators to master the practical skills of foreign students in educational time and time for self-preparation on products firm “3B Scientific”.

In 2011 on Department of Surgery № 1 of the State Organization “Dnipropetrovs’k Medical Academy Ministry Health of Ukraine” was founded Ukraine's first training center “Endoscopic technologies in medicine”, bases on which of foreign interns learn to use mini invasive operating technologies in surgery.

This center was open thanks to involving special training and instruments of the company “Karl Storz-Endoscope” and “Ethicon Endosurgery” (subsection “Ethicon a Johnson and Johnson Company”).

Nosological principle of training that exists in most clinical departments, unfortunately, does not meet the practical work of a doctor, so we came to forming the curriculum by the syndrome principle: a practical training combines several pathological conditions, with oriental features, such as the module “Abdominal

surgery”, consists of two modules of content (substantial modules): “Urgent abdominal surgery” and “Surgical Gastroenterology and Proctology”.

Thus, the substantial module “Surgical Gastroenterology and Proctology” includes “Syndrome of chronic pain in the upper region of abdominal cavity”, “Syndrome of mechanical jaundice”, “Syndrome of an acute pain in perianal area”, “Syndrome of rectal prolepses” and “Diarrheic-inflammatory syndrome”, combining similar diseases or their complications in the form of so-called educational elements, where, for example, a practice training for “Syndrome acute pain in perianal region” contains “Acute hemorrhoids”, “Acute anal fissures”, “Acute paraproctitis” and “Inflammation of the epithelial coccygeal passage”.

This approach is appropriate to expediently use the time of practical training, examine patients according to pathological syndrome, mastering the skills in classes with medical simulators, and perform differential diagnosis with the definition of a rational treatment program.

To support the learning process developed by the principles of credit-modular system using multimedia lectures, the textbook “Surgery” in 3 volumes (5 books) [4], in this time –process translated this books on English, methodological guide of development for foreign students and of foreign interns, methodological guide of development for teachers, hand book and individual plans for students and interns, journal of the teacher.

For the practical training used division’s computer class (10 computers) - for computer testing of students and interns, two classes of medical mannequins and simulators (products firm “3B Scientific”) - for acquiring and mastering practical skills, supervision of patients in the surgical department, supervised and theoretical survey in training rooms.

For the interns besides the basic work in the surgical department with patients it’s necessary to mastery of the operational equipment in operation and manipulation rooms, as well as mastering of mini invasive surgery technology in the learning center “Endoscopic technologies in medicine”.

**The algorithm of training and preparation on surgery of foreign students of 4th course on practical studies (2 hours 40 minutes):**

1. Muster, the announcement of a theme and the purpose of practical studies - 5 minutes;
2. Carrying out of theoretical computer testing on an studies theme in a computer class of chair (30 tests for 30 seconds on everyone students) - to 15 minutes;
3. Control of the mastered two concrete practical skills on an studies theme on simulators and firm training apparatus “3B Scientific” - to 50 minutes;
4. Investigation the thematic patient in surgical division of clinic after development of practical skills on simulators and firm training apparatus “3B Scientific” - to 30 minutes;
5. Theoretical analysis of results investigation the thematic patient and a theme of study with poll of each student - to 50 minutes;
6. Analysis of the basic errors admitted by students - 5 minutes;
7. The information on the task on preparation for following practical studies - 5 minutes.

After each study to of foreign students’ time for independent development of practical skills by preparation for following study is allocated.

**The algorithm of training and preparation on surgery of surgeons-interns on practical studies (8 hours):**

1. Muster, the announcement of a theme and the purpose of practical studies - 5 minutes;
2. Work in surgical division on inspection of patients, participation in medical and diagnostic manipulations, on operations - 4 hours;
3. Theoretical analysis of a theme of study – 50 minutes;
4. Development of practical skills of performance of medical and diagnostic manipulations on firm “3B Scientific” productions - 1 hour;
5. Development of practical skills of performance surgical, including, laparoscopy

operations in a special class of firms “Karl Storz-Endoscope” and “Ethicon Endosurgery” (subsection “Ethicon a Johnson and Johnson Company”) - 1 hour;

6. The information on the task on preparation for following practical studies - 5 minutes.

## **RESULTS.**

Experience of using credit-modular system in teaching and measuring knowledge of surgery since 2005 suggests that this approach is effective.

Received results underscore the increased objectivity in the control of knowledge on the part of teachers' interest and increasing of foreign students and of foreign medical interns' interest to master a subject, that allowed to prepare a general practitioner in surgery and surgeons, and integrate in the future in practical public health in worldwide.

## **CONCLUSION.**

It is necessary the cooperation of the educational institution, clinical department and companies - manufacturers of medical and educational equipment, as in our case, working with “3B Scientific” and “Karl Storz-Endoscope”, “Ethicon Endosurgery” (subsection “Ethicon a Johnson and Johnson Company”).

Use of medical simulators and training mannequins for acquiring practical skills and new technologies of operative interventions using modern endoscopic equipment, tools, and simulators allows imitating the real clinical situation during operative interventions and learning steps to resolve it.

As illustrated by the medical literature, the main errors in the operative interventions fall on the first 30-40 operations.

That's why the working out of these first surgical interventions should be conducted on medical simulators for the purpose of reduce the risk of mistakes in the future.



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**ABSTRACT. SURGERY: EDUCATION FOR FOREIGN STUDENTS AND OF FOREIGN SURGEONS-INTERNS WITH USE OF MODERN TEXTBOOK AND MEDICAL SIMULATORS.** Ya.S. Bereznytsky, V.V. Gaponov, R.M. Molchanov, V.P. Sulyma, R.V. Duka, I.L. Verholaz, S.L. Malinovskyj, O.V. Bilov, K.O. Yaroshenko, I.F. Polulyah-Chornovol, A.P. Bogomolov.

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**РЕЗЮМЕ. ХИРУРГИЯ: ОБУЧЕНИЕ ДЛЯ ИНОСТРАННЫХ СТУДЕНТОВ И ИНОСТРАННЫХ ХИРУРГОВ-ИНТЕРНОВ С ИСПОЛЬЗОВАНИЕМ СОВРЕМЕННОГО УЧЕБНИКА И МЕДИЦИНСКИХ ТРЕНАЖЕРОВ.** Я.С. Березницкий, В.В. Гапонов, Р.Н. Молчанов, В.Ф. Сулима, Р.В. Дука, И.Л. Верхолаз, С.Л. Малиновский, А.В. Белов, Е.А. Ярошенко, И.Ф. Полулях-Чорновол, А.П. Богомолов.

Задачи профессиональной деятельности врача общей практики в Украине, странах Европы и Америки в общем почти одинаково определяют основные требования объема знаний и практических навыков для выпускника высшего учебного медицинского заведения: опрос больного, выполнение физикального обследования, обоснование предварительного диагноза, определение алгоритма дополнительных методов исследования с анализом полученных результатов, проведение дифференциальной диагностики, формирование клинического диагноза, построение программы лечения и ее выполнение.

Главным в подготовке высокого уровня квалификации врача на первом месте в градационных системах образования различных стран и обществ находится получение качественного высшего медицинского образования, чему способствует внедрение кредитно-модульной системы в учебный процесс.

Полученные результаты использования медицинских тренажеров в

подготовке студентов и врачей-интернов по хирургии повышает объективность в оценке знаний студентов со стороны преподавателей и повышает интерес самих иностранных студентов и врачей-интернов к предмету обучения, что улучшит подготовку врача общей практики по хирургии, позволит эффективнее интегрироваться в будущем в практику здравоохранения различных стран.

**РЕЗЮМЕ. ХІРУРГІЯ: НАВЧАННЯ ДЛЯ ІНОЗЕМНИХ СТУДЕНТІВ ТА ІНОЗЕМНИХ ХІРУРГІВ-ІНТЕРНІВ З ВИКОРИСТАННЯМ СУЧАСНОГО ПІДРУЧНИКА ТА МЕДИЧНИХ ТРЕНАЖЕРІВ.** Я.С. Березницький, В.В. Гапонов, Р.М. Молчанов, В.П. Сулима, Р.В. Дука, І.Л. Верхолаз, С.Л. Маліновський, О.В. Білов, К.О. Ярошенко, І.Ф. Полулях-Чорновол, А.П. Богомоллов.

Задачі професійної діяльності лікаря загальної практики в Україні, країнах Європи та Америки загалом майже однаково визначають основні вимоги обсягу знань та практичних навичок для випускника вищого навчального медичного закладу: опитування хворого, виконання фізикального обстеження, обґрунтування попереднього діагнозу, визначення алгоритму допоміжних методів дослідження з аналізом отриманих результатів, проведення диференційної діагностики, формування клінічного діагнозу, побудова програми лікування та її здійснення.

Головним в підготовці високого рівня кваліфікації лікаря на першому місці в градаційних системах освіти різних країн та суспільств знаходиться отримання якісної вищої медичної освіти, чому допомагає втілення кредитно-модульної системи в навчальний процес.

Отримані результати використання медичних тренажерів в підготовці студентів і лікарів-інтернів по хірургії підвищує об'єктивність в оцінці знань студентів з боку викладачів та підвищує інтерес самих іноземних студентів і лікарів-інтернів до предмету навчання, що покращить підготовку лікаря загальної практики по хірургії, дозволить ефективніше інтегруватися в майбутньому в практику охорони здоров'я різних країн.