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Formation of clinical reasoning for quality improvement in medical education

At the current stage of the development and implementation of the National Health Reform Strategy in Ukraine for the period 2015-2025 a priority is to provide professional medical services. It is possible to do with the conditions of high-quality medical education. The aim of the reforming Strategy in higher medical education is to train erudite doctor-specialists with a high theoretical knowledge level and practical skills, an ability to make logical decisions according to the pathogenesis at any clinical situation [1].

In the rapidly evolving world of medicine, the educational reform requires the introduction of new educational technologies according to the

Bologna Convention. Its purpose is to train modern doctors who are able to creatively interpret all available theoretical material, practical experience of leading experts and introduce it in their future practice. The important category of the doctor's practice is clinical thinking. In the literature the terms such as clinical thinking, clinical reasoning, clinical judgment, decision making, problem solving are often used interchangeably.

Clinical reasoning is widely acknowledged as a fundamental part of the health care education, but it needs the development of modern teaching and learning methods that enhance clinical reasoning skills among medical students. Medical students in order to learn and apply clinical reasoning should develop the independence of thought, perspicacity in personal and social level, humility, integrity, perseverance, self-confidence, interest for research and curiosity.

We use the term clinical reasoning to describe the cognitive process to resolve professional tasks based on knowledge, experience and intuition. According to some authors, the first form of medical diagnostic thinking was intuition, which is a product of thought and experience. Intuition is the perception and understanding of concepts without the conscious use of reasoning. Intuition performs some role in the diagnostic process, but only in the early and preliminary stage. It is a part of clinical experience that allows the practitioner to recognize items and standards and approach the right conclusions. It can not be a legitimate basis for decision making in the diagnostic process [2, 3].

Making the diagnosis involves establishing its nosology. This is the most illustrative example of doctor's intuition. Doctor uses decision making by intuition in case of absence of basic and specific syndromes according to Bayes's theorem.

The basic algorithm for the practical implementation of clinical thinking and decision-making is as follows:

- identify disease symptoms of the first stage (collecting complaints, medical history taking and conducting a physical exam);
- preliminary conclusion about the essence of the pathology in a particular situation;
- the appointment diagnostic tests for verification and further diagnosis;
- interpretation of laboratory tests and diagnostic procedures in the form of expanded definitive clinical diagnosis and prognosis;
- designing safe and effective treatment regimens or preventive strategies.

The clinical thinking is the result of the qualitative organized educational process in higher medical school through learning the basic and clinical disciplines. This requires to involve teachers as a tutor.

The ability to establish the presence of some clinical symptom is only a skill. Later a student forms the ability to distinguish the features of this symptom. This is the first stage of physician forming [4].

The next step in developing clinical thinking is to assess the course and prognosis in a specific clinical case. Theoretical knowledge is an important basis to acquire practical skills and to form clinical thinking. The theoretical knowledge level is very easy to check by application of standardized tasks and tests. However, often we determine the students' high level of theoretical foundation and inability to apply them in practice. One challenge is how to teach students to apply their knowledge when they are dealing with clinical problems. Different types of simulating modalities as a teaching method in health care education has developed rapidly during the last decade. That is why the most effective method of interactive learning today is a role playing. Role-play is an effective means of learning communication and interpersonal skills. Students communicate with a real patient under the teacher supervising. It includes developing competence in specific skills associated with medical interviewing (giving and receiving feedback), history taking, performing a physical examination (palpation, percussion, auscultation). The student determines the treatment strategy, applies deontological skills in interviewing with patients, which was acquired in previous stages of education. The student examines himself and works out new skills in real life legally secure situations. This role-playing activity helps students understand better what the patient feels in this situation, empathize with a patient. It creates a more realistic training situation and enhances students' involvement. The student should always acquire and improve practical skills and clinical thinking.

At the present stage of Ukrainian education test control has an intense development. Tests occupy a special place in the development and implementation of new approaches to assess achievements and student's knowledge in the learning process.

To prepare for the integrated licensing examination "STEP 2. General medical training" students often use the strategy of memorizing correct answers to tests from last years brochures. This database contains tests for checking initial and final test scores at workshops and control module that allows students to get high scores during the computer testing. However,

during spoken answers about theoretical issues or interpretation of the clinical problem, the ability to explain, identify key pathogenetic links, etc., there are many difficulties.

During the teaching of internal medicine from the first workshops we conduct systematic work aimed at the gradual formation of students' ability to assess the clinical situation, analyze it, make conclusions, forecasts and recommend measures to solve current problems. The situational task of the database "STEP 2" contains the clinical problem with different characteristics. It requires theoretical knowledge and practical skills in internal medicine and other disciplines. Decision clinical problem requires not only a certain level of theoretical knowledge, but the analytic-synthetic and creative activity. It is a necessary component in the formation of student clinical thinking.

Improvement of teaching and learning is not possible without a proper material base. Therefore, our department of internal medicine №1 is constantly working on upgrading the diagnostic equipment. We currently utilize the modern Holter recorder system device, computer spirometry and electrocardiography devices, hydrogen breath test monitor, which allow to engage the student in any real-life situation and makes it possible to improve the students' clinical thinking and problem-solving skills.

Vocational and practical training of future doctors is closely related to modern methods of diagnosis and treatment, which today are widely used in Ukraine, but unfortunately are not described in basic national textbooks.

Therefore, it is necessary to use the materials of American and European textbooks that more perfectly describe modern methods and patient care protocols. To solve this problem, our department has created the own social network account where the most new and relevant internal medicine resources on Ukrainian, Russian and English are uploaded. This ensured the possibility to obtain the modern information to foreign students.

Therefore, current rates of economic growth, society development demonstrate the necessity of new educational methods introduction. The development of cognitive activity contributes to clinical thinking improvement. It motivates students to constantly engage in updating their knowledge and skills and ultimately influences positively on quality improving of training medical students. The medical education programs should adopt the attitudes that promote and mobilize the skills of clinical reasoning.

Student's theoretical knowledge without patient's communication does not provide a desired specialist in the labor market and employment. Continuous practical skills acquisition and consolidation improve a student theory and promotes clinical reasoning.

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Abstracts

IGOR SKRYPNYK, OLEKSANDR GOPKO, GANNA MASLOVA, NATALIIA PRYKHODKO. **Kształtowanie myślenia klinicznego jako sposób doskonalenia jakości kształcenia lekarzy.** *Realizacja Narodowej Strategii dotyczącej budowy nowego systemu opieki zdrowotnej na Ukrainie jest bezpośrednio związane z problemami oraz perspektywami wyższego kształcenia medycznego. W artykule przedstawiono sposoby kształtowania myślenia klinicznego studentów oraz warunki doskonalenia jakości kształcenia lekarzy, w tym system oceniania wiedzy i umiejętności, stopień przygotowania teoretycznego i praktycznego, doskonalenie bazy materialnej, a także form kształcenia na odległość.*

Kluczowe słowa: *medycyna, myślenie kliniczne, doskonalenie jakości kształcenia lekarzy.*

ІГОР СКРИПНИК, ОЛЕКСАНДР. ГОПКО, ГАННА МАСЛОВА, НАТАЛІЯ ПРИХОДЬКО. **Формування клінічного мислення як засіб удосконалення якості освіти лікарів.** *Реалізація Національної стратегії побудови нової системи охорони здоров'я в Україні безпосередньо пов'язана з проблемами та перспективами вищої медичної освіти в країні. В умовах сучасної медичної освіти особливої значущості набуває проблема удосконалення клінічного мислення студентів. Запровадження тестової системи оцінки знань вимагає фахового поєднання підвищення практичної та теоретичної підготовки студентів, що реалізується шляхом впровадження ролевих ігор, удосконалення матеріально-технічної бази та засобів дистанційної освіти.*

Ключові слова: *внутрішня медицина, клінічне мислення, удосконалення якості освіти лікарів.*

ИГОРЬ СКРЫПНИК, АЛЕКСАНДР ГОПКО, АННА МАСЛОВА, НАТАЛИЯ ПРИХОДЬКО. **Формирование клинического мышления как способ совершенствования качества образования врачей.** *Реализация Национальной стратегии построения*

ния новой системы здравоохранения в Украине напрямую связана с проблемами и перспективами высшего медицинского образования в стране. В условиях современного медицинского образования особую значимость приобретает проблема совершенствования клинического мышления студентов. Введение тестовой системы оценки знаний требует профессионального сочетания повышения практической и теоретической подготовки студентов, что реализуется путем внедрения ролевых игр, совершенствование материально-технической базы и средств дистанционного образования.

Ключевые слова: внутренняя медицина, клиническое мышление, усовершенствование качества образования врачей.

IGOR SKRYPNYK, OLEKSANDR GOPKO, GANNA MASLOVA, NATALIYA PRYKHODKO. **Formation of clinical reasoning for quality improvement in medical education.** *For successful implementation of the National Health Reform strategy problems of higher medical education in Ukraine should be solved. The problem of clinical reasoning is a cornerstone of competence in current medical education. The best methods for teaching and evaluating clinical reasoning skills among medical students have not yet been elucidated. The introduction of the test assessment system requires professional knowledge combined with increasing practical and theoretical training of medical students. It accomplishes through the introduction of role-playing games, improving material, technical base and means of distance education.*

Key words: internal medicine, clinical thinking, improvement of doctor's education quality.