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## **FOSTERING CLINICAL THINKING IN DENTAL DOCTORS THROUGH POST-GRADUATION PROFESSIONAL TRAINING**

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*During the internship training, future dental doctors expand knowledge about understanding the pathogenetic mechanisms of various pathological conditions or illnesses. Most contemporary effective diagnosis and treatment approaches are based on clinical thinking skills, the link between sciences and practice. The purpose of this study is to investigate and analyze the peculiarities of building up clinical thinking skills in future paediatric dentists at the postgraduate stage of their training. Developing clinical thinking skills in dental students typically starts since their junior years at the medical university, when they begin studying basic sciences. The background obtained during undergraduate training should be enriched in order to improve recognizing a wide variety of diseases and conditions through the internship training course. Professional thinking skills are fostered at the chair-side practice, when dealing with patients under the guidance of experienced mentors and clinicians. Clinical thinking switches on since the first minutes of doctor-patient interaction and goes on through the treatment course. At the postgraduate stage, it is essential to continue developing the holistic vision of the patient that will help to combine the evidence-based standards of medical care and patient-centred approach (personalized medical care). Conclusion. Thus, the training activities for dental intern doctors should be designed in order to maximally contribute to fostering clinical thinking skills. The mentors and teaching assistants must have clear and deep understanding of what factors can promote this process, and what can not. Among the most significant methodological achievements of postgraduate education is the emphasis on the development of critical and creative thinking skills, which are most clearly manifested by the creativity of clinical thinking.*

Key words: clinical thinking, paediatric dental intern, post-graduate training.

The strategic goal of the dental specialists' training consists in providing dental intern doctors with best-quality professional knowledge and practical skills in order to facilitate their start of independent practice after graduating from a higher medical educational institution with confidence. Proficient dental doctors should be capable of performing the full range of professional activities that includes collecting information about the patient and its analysis, performing diagnostic procedures and making clinical judgments using evidence-based diagnoses, treatment planning, and developing the proper preventive patient-centred modalities. All this requires an integration of knowledge in basic and clinical sciences and practical experience, which has gained through managing patients in dental settings under the supervision of the qualified teaching assistants and is getting improved through further clinical chair-side practice.

During the internship training, it is essential for the future dental doctors to enhance the knowledge about understanding the pathogenetic mechanisms of various pathological conditions or illnesses. However, sound theoretical background and overall practical skills are far from being the only prerequisites for successful dental care. Most contemporary effective diagnosis and treatment approaches are based on clinical thinking skills, the link between sciences and practice. Dental profession impacts upon the dentist's thinking by developing somewhat specific features that may manifest themselves in understanding and judging issues beyond the scope of the professional field and demonstrating signs of certain profession-determined limitations.

Dental paediatric treatment is typically associated with certain difficulties due to the both psycho-

emotional characteristics of young patients and structure of their teeth. It is difficult for young children to analyze their subjective feelings deeper, moreover, children may inadequately respond to objective examination techniques that lead to diagnostic errors and improper choice of treatment. When dealing with children of different ages, the paediatric dentists, in addition to sound scientific background and overall practical skills, should possess professional thinking skills to make correct diagnosis and to offer the proper treatment plan, i. e. to make right clinical decisions.

Thus, the development of dental paediatric interns' ability to practice independently and to contribute to achieving long-term clinical success requires the fostering of clinical thinking as an essential aspect in building the professional competencies and a predominant determinant of successful dental practice.

This work **aims** at investigating and analyzing the peculiarities of building up clinical thinking skills in future paediatric dentists at the postgraduate stage of their training.

Clinical thinking is considered as a professional, creative decision making in identifying the presenting problem, selecting the best treatment options and predicting prognosis for a particular patient based on the theoretical background, experience and clinical intuition. It is also regarded as intellectually engaged, skilful, and responsible thinking that includes the application of assumption, knowledge, and competence. Despite the advancements of instrumental and imaging diagnostic techniques, clinical thinking and reasoning based on the findings obtained by interviewing and examining the patients is a cornerstone of diagnosis.

Numerous reports regard clinical thinking as a synonym for professional medical (doctor's) thinking [1, 2].

G. S. Abramova and Yu. A. Yudchits have identified settled parameters in terms of professional thinking of (medical or dental) doctors:

- self-reflection (I-concept, self-esteem);
- thinking about other people (e. g. other as a patient, or as a person, human being);
- awareness of own professional capabilities and boundaries of own personal influence over other people [3].

Professional thinking is a developed set of complex mental operations involving analysis and synthesis, deduction and induction, assumptions and generalizations that are used to solve diagnostic and treatment issues.

The typical features of clinical thinking involve consistency, the presence of a number of unknown variables, the error probability, and limitation in time parameters [4].

While pondering over the ways of fostering clinical thinking in dental paediatric interns, it must be recognized that clinical practice is the main platform to build up clinical thinking skills. During chair-side practice, interacting with a patient under the guidance of an experienced mentor, solving diagnostic and treatment tasks, interns improve their mastery to apply their intellectual resources and competencies in various situations when rendering dental care to children [5].

Clinical thinking is a type of purposeful productive intellectual functioning. It is always associated with the choice of the optimal solution from a number of possible alternatives in each particular clinical case. Consequently, when dealing with patients in dental settings, the dental paediatric interns face a wide variety of clinical situations, and should critically assess, find and provide the thoughtful, high-quality care for the problems presented.

Clinicians, who possess well-developed clinical thinking skills, are capable of reflecting upon their subjective impressions and finding out rationale and significant objective things; they are also capable of making adequate clinical interpretation of what they have noticed.

The development of clinical thinking is one of the most essential aspects in the professional training of dental interns and serves as a prerequisite for the further successful and independent clinical career. A. K. Markov suggests the concept of professional thinking as the unity comprising five components:

- the process of generalized and indirect criticism of professional (purposes, tasks, occupational environment, conditions and results of work);
- the ways and skills to obtain new knowledge about different aspects of the profession and the ways of their transformation;
- setting forth clear professional goals and objectives, and ensuring the achievement of these objectives;

- staging in professional decision-making;
- goal setting and planning through the course of work; elaborating new strategies of professional activity [6].

The main algorithm for implementing clinical thinking and decision-making as typically regarded by clinicians is the following [7]:

- identifying and studying the symptoms of the disease at the first stage when examining and interviewing the patient (i. e. history taking including present complaints, past medical history, family history, social history, and physical examination);
- making preliminary conclusion about the nature of the condition or disease in a particular case;
- choosing and scheduling additional diagnostic investigation to verify and confirm the diagnosis;
- interpreting all the data obtained and summarizing them in the form of a clinical diagnosis and prognosis;
- planning of all necessary treatment, preventive and rehabilitation measures.

Thinking is a developmental process that evolves the most effectively and rapidly at a young age. The development of clinical thinking starts since the junior years at universities, while mastering basic disciplines. The acquired knowledge allows students to apply their expertise when recognizing various diseases through the internship training course. Fostering clinical thinking of interns, their capability to generalize and utilize new knowledge, to transfer thinking skills from one situation to another is achievable only through the high-quality and purposeful management of their intellectual activity [8].

To gain clinical experience and expertise as soon as possible is one of the main goals put in the forefront by the modern medical practice. Clinical thinking is promoted in the discussions between interns and their mentors, when scrutinizing, differentiating and appraising clinical and profession-relevant information, through the problem-based learning, case-based situations, and at chair-side practice. Clinical thinking gets invoked since the first minutes of interacting with the patient and lasts throughout the treatment course and follow-up care. Good communicate skills contribute much in earning patient's trust, promote mutual understanding, and considerably increases the compliance and, as a result, treatment efficacy.

Communicative skills of dental paediatric dentists are as important as their well-trained skills to perform professional manipulations. When dealing with very young patients, it is essential to establish contact not only with the children, but with their immediate relatives or guardians, who may be somewhat prejudiced against all the doctor's actions and recommendations [9]. Therefore, much attention is usually paid to skills in establishing contact and promoting communication between a doctor as a key figure in health care, auxiliary medical personnel, a child, relatives or guardians in the course of post-graduate training at the Department of Paedi-

atric Dentistry, Educational and Research Institute of Postgraduate Training at the Ukrainian Medical Stomatological Academy.

During hands-on training, when dealing with patients, dental paediatric interns improve their skills to communicate with children based on knowledge of their age characteristics. For instances, very young children typically have a very limited vocabulary to describe their troubles or unpleasant sensations; they may also experience some difficulties in describing the character of pain or its localization. At the dentist's office, children are often scared or anxious, and even may pretend they are having complaints or symptoms that actually are characteristic not for a particular disease, but for its complications. Experienced clinicians and mentors teach the interns to watch the child's behaviour and to recognize any slightest changes that allow them to obtain the necessary additional information to make the diagnosis [10].

Another effective way to develop clinical thinking widely applied at the Department is implemented through demonstrations by 'watch what I do and try to learn' principle. However, this method, when it doesn't rest upon proper background and explanations, is of little effectiveness. Clinical thinking allows clinicians to assess not only a particular disease of a particular body system, but to perceive the whole body as an integrated unit taking into account all its individuals features. By the concepts of clinical thinking, a disease is a complex pathological process, therefore clinical thinking skills are crucial to reveal it all pathological links. The ability to use every fact, which would seem to be unimportant, in order to get a consistent picture of pathological process and to interpret it, is the most important quality of intern doctor's thinking [11].

At the postgraduate stage, it is essential to continue developing the holistic vision of the patient that will help to combine the evidence-based standards of medical care and patient-centred approach (personalized medical care). For example, some doctors can underestimate the complexity of the comorbid pathology, when additional conditions co-occur with the primary disease that may mislead in making up treatment plan [12].

At the beginning of the career path, young doctors do experience some difficulties and uncertainty in establishing diagnosis. However, by gaining own practical experience, communicating with patients, taking educational programs at advanced training

courses (life-long learning), each clinician builds up his /her own individual diagnostic system based on clinical thinking skills that is the key prerequisite to successful practice.

Thus, the training activities for dental intern doctors should be designed in order to maximally contribute to fostering clinical thinking skills. The mentors and teaching assistants must have clear and deep understanding of what factors can promote this process, and what can not. Among the most significant methodological achievements of postgraduate education is the emphasis on the development of critical and creative thinking skills, which are most clearly manifested by the creativity of clinical thinking.

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### Реферат

ФОРМУВАННЯ ПРОФЕСІЙНОГО МИСЛЕННЯ У ЛІКАРІВ-СТОМАТОЛОГІВ НА ЕТАПІ ПІСЛЯДИПЛОМНОЇ ОСВІТИ

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Ключові слова: клінічне мислення, лікар-інтерн, стоматолог, навчання.

Під час навчання в інтернатурі лікарі-інтерни розширюють той обсяг знань, що необхідний для розуміння патогенетичних механізмів виникнення будь-якого патологічного стану або хвороби. Для успішного розпізнавання хвороби і ефективного лікування необхідно володіти клінічним мисленням, як сполучною ланкою між теорією і практикою. Мета роботи. Розглянути та проаналізувати особливості формування клінічного мислення у лікарів-стоматологів дитячих на післядипломному етапі навчання. Формування клінічного мислення у лікарів-стоматологів починається вже на перших курсах навчання

при опануванні базових дисциплін. Накопичені знання дозволяють використовувати цей багаж знань при розпізнаванні різних захворювань у процесі навчання в інтернатурі. Професійне мислення виховується у процесі спілкування інтерна, викладача і пацієнта біля крісла хворого. Клінічне мислення починається з перших хвилин спілкування з хворим і триває протягом усього лікувального процесу. На післядипломному етапі навчання у лікаря-інтерна необхідно формувати цілісне уявлення про хворого, що дозволить органічно поєднувати стандарти медичної допомоги з індивідуальним підходом. Висновок. Навчальний процес повинен будуватися таким чином, щоб максимально сприяти формуванню клінічного мислення у лікарів-інтернів. Викладач повинен знати і розуміти, які фактори сприяють цьому процесу, а які ні. Значущим методологічним досягненням післядипломної освіти є упор на розвиток творчих здібностей лікарів-інтернів, які найбільш яскраво проявляються креативністю клінічного мислення.

### **Реферат**

**ФОРМИРОВАНИЕ ПРОФЕССИОНАЛЬНОГО МЫШЛЕНИЯ У ВРАЧЕЙ-СТОМАТОЛОГОВ НА ЭТАПЕ ПОСЛЕДИПЛОМНОГО ОБРАЗОВАНИЯ**

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Ключевые слова: клиническое мышление, врач-интерн, стоматолог, обучение.

Во время учебы в интернатуре врачи-интерны расширяют тот объем знаний, который необходим для понимания патогенетических механизмов возникновения любого патологического состояния или болезни. Для успешного распознавания болезни и эффективного лечения необходимо обладать клиническим мышлением, как связующим звеном между теорией и практикой. Цель работы. Рассмотреть и проанализировать особенности формирования клинического мышления у детских врачей-стоматологов на последипломном этапе обучения. Формирование клинического мышления у врачей-стоматологов начинается уже на первых курсах обучения при овладении базовыми дисциплинами. Накопленные знания позволяют использовать этот багаж знаний при распознавании различных заболеваний в процессе обучения в интернатуре. Профессиональное мышление воспитывается в процессе общения интерна, преподавателя и пациента у кресла больного. Клиническое мышление начинается с первых минут общения с больным и продолжается в течение всего лечебного процесса. На последипломном этапе обучения у врача-интерна необходимо сформировать целостное представление о больном, что позволит органично сочетать стандарты медицинской помощи с индивидуальным подходом. Вывод. Учебный процесс должен строиться таким образом, чтобы максимально способствовать формированию клинического мышления у врачей-интернов. Преподаватель должен знать и понимать, какие факторы способствуют этому процессу, а какие нет. Значимым методологическим достижением последипломного образования является упор на развитие творческих способностей врачей-интернов, которые наиболее ярко проявляются креативностью клинического мышления.