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COMPILATION AND STEPS OF THE MEDICAL SITUATIONAL ISSUES ALGORITHM

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Abstract

This article discusses the theoretical foundations and stages of building an algorithm for situational issues used in medical education and clinical practice. It is justified that the algorithmic approach is an important methodological tool in the formation of clinical thinking, reducing diagnostic errors and systematizing the decision-making process. The results of the study showed that situational issues built on the basis of the algorithm increase the professional competence of students.

Key words

situational question, algorithm, clinical thinking, differential diagnosis, medical education, decision-making.

INTRODUCTION

One of the priority tasks of modern medical education is the formation of clinical thinking skills among students. Case-based learning is based on real clinical conditions and allows you to integrate theoretical knowledge with practice.

However, haphazard analysis of situational issues can lead to misdiagnosis and unreasonable treatment. Therefore, they must be compiled on an algorithmic basis.

The purpose of the study is the scientific substantiation of the principles and stages of development of the algorithm of problematic medical issues.

Information technologies and methods of mathematical modeling are becoming increasingly important in medicine. The algorithmization of problematic medical issues and the creation of biomedical models play an important role in the diagnosis of diseases, the planning of treatment processes and medical decision-making. This abstract highlights the process of building an algorithm for situational issues and the basis for creating biomedical models.

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METHODS

The following methods were used in the study:

- Pedagogical and clinical analysis
- Algorithmic modeling
- Comparison and generalization
- Systematization of the structure of situational issues

The situational issues algorithm is based on a clinical decision model. Each stage is formed on the basis of a logical sequence and "decision points" (decision points)

Medical situational questions are questions based on a real clinical situation, where the condition, symptoms, results of laboratory and instrumental studies are shown. Such questions develop students' clinical thinking and form skills in applying theoretical knowledge in practice.

The main purpose of situational issues is:

- generation of diagnostic algorithm;
- make the right decisions in a difficult situation;
- definition of curative and preventive measures.

Stages of building an algorithm for situational issues.

The algorithm of medical situational issues is compiled in the following sequential stages:

Problem definition.

Based on complaints, history and clinical signs of the patient, the main problem is determined.

Data analysis.

The results of laboratory and instrumental studies are analyzed. Important and minor signs stand out.

Identification of possible diagnoses.

Based on the data obtained, several possible diagnoses are formed.

Definitive diagnosis.

Based on additional research and logical analysis, the final diagnosis will be determined.

Treatment algorithm selection.

Methods of treatment and recommendations corresponding to the patient's condition will be developed.

The concept of biomedical models.

A biomedical model is the representation of biological or medical processes through a mathematical, graphical, or computer model. Such models simplify the complex processes that occur in the body and allow you to study them.

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Biomedical models are divided into the following types:

- mathematical models;
- statistical models;
- Simulation models
- models based on computer and artificial intelligence.

RESULTS

As a result of the study, the following algorithmic stages of construction of situational issues were determined:

1. problem definition

The main complaints and leading symptoms of the patient are established.

2. history

Medical history, risk factors and life history. "

3. objective examination

Physical examination results and vital signs are evaluated.

4. primary diagnosis

Based on the data obtained, a possible diagnosis will be formed.

5. Differential diagnosis

Similar symptoms are compared and logically ruled out.

6. Additional checks

Laboratory and instrumental studies are planned.

7. Definitive diagnosis

According to the results of the examination, an accurate diagnosis is established.

8. Treatment strategy

An evidence-based treatment plan is being drawn up.

Results showed that situational questions built on an algorithm increased systems thinking and diagnostic accuracy in students.

DISCUSSION

- Algorithmic approach optimizes clinical decision-making and reduces human error This method is particularly effective in medical education and will prepare students for real clinical situations.
- The algorithm should not be rigid, but a flexible methodological tool. Each clinical situation requires an individual approach.
- Integration with modern modeling technologies and digital platforms increases the efficiency of the algorithmic approach

Process of creating biomedical models.

Creation of biomedical models consists of several consecutive stages:

Selection of study object

For example, cardiac activity, blood circulation or the process of breathing.

Definition of basic parameters.

In the model, biological indicators are selected (heartbeat, blood pressure, glucose level, etc.).

Model building.

Based on mathematical equations or algorithms, a model is formed.

Testing the model. "

The created model will be checked against real medical data.

Analysis of results.

Based on the model, the results obtained are analyzed and conclusions are drawn.

Practical implications of situational issues and modeling.

In medicine, algorithms and models create the following possibilities:

- Improves diagnostic accuracy
- supports physician decisions;
- strengthens the knowledge of students in the educational process;
- optimizes the treatment process.

In particular, AI-based models allow a large amount of medical data to be analyzed quickly.

CONCLUSION

The algorithm of medical situational questions is an effective tool for the development of clinical thinking. Its phased creation systematizes the diagnostic process, improves the quality of decision-making and develops the professional competence of students.

The widespread application of the algorithmic approach in the medical education system is important in the training of modern medical specialists.

In conclusion, the compilation of an algorithm of problematic medical issues and the creation of biomedical models are an integral part of modern medicine. These approaches play an important role in improving the quality of medical education, effective organization of diagnosis and treatment.

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