

## DEVELOPING CLINICAL TRAINING BASED ON SIMULATION TRAINING

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**ANNOTATION:** Analyzes the didactic and practical aspects of introducing simulation training, blameless debriefing and reflection technologies in the “Emergency Medical Care” educational process . The role of simulation education in the development of clinical thinking, decision-making, stress resistance and teamwork skills is based on scientific sources and experimental results. During the study, OSCE mini-stations, debriefing algorithms and DIEP reflection journals were developed and implemented in 3 medical universities. The results obtained showed that these methodological approaches significantly increase the emotional-volitional stability of students, clinical readiness and the competence of consistent decision-making in problem situations. This integrative method is recommended as an effective pedagogical tool for improving the quality of the medical education process.

**Keywords:** simulation training, OSCE, debriefing, non-accusatory debriefing, reflection, DIEP model, clinical thinking, stress management, emergency medical care, pedagogical technology, emotional stability, teamwork, medical education, clinical competence.

**Login.** Modern medical education requires training students as specialists who can make quick, accurate and safe decisions in real clinical situations. Especially in the field of "Emergency Medical Care", the high level of risk, uncertainty and rapid change of clinical conditions necessitate the use of simulation training technologies.

have the opportunity to develop clinical skills in a safe, controlled , and repeatable environment. This approach:

- activates clinical thinking,
- speeds up decision-making under stress,
- strengthens teamwork skills,
- from mistakes .

, an integrated methodological complex was developed based on OSCE mini-stations, no-blame debriefing, and reflection journals. This article analyzes the use of simulation exercises in the “Emergency Medical Care” training process, their educational effectiveness , and practical significance in developing clinical training.

**The role of simulation exercises in the learning process.** Simulation training in the educational process of the subject "Emergency Medical Care" is one of the most effective methods for developing students' clinical readiness. The competencies required in emergency situations - accuracy, speed, stress resistance and teamwork - are practically formed precisely through simulation. The ability to reproduce real clinical situations without direct harm to the patient is considered the main advantage of simulation education.

Simulation training serves the following pedagogical and clinical purposes:

**Safe replication of emergency clinical cases. Students** safely practice practical skills in high-risk situations such as polytrauma, shock, STEMI, and anaphylaxis , which reduces the likelihood of errors in real-world situations.

**Developing decision-making skills under stress.** During the simulation, the student learns to work under extreme pressure. This increases the speed and accuracy of clinical thinking.

**Strengthening skills in the use of clinical algorithms and protocols.** Standards such as ATLS, ACLS, BLS, FAST protocols are repeatedly used in simulation stations. The student automates protocols.

**Developing a culture of team work.** Emergency medicine is based on teamwork. Through simulation:

- role distribution,
- communication,
- coordination,
- leadership,
- SBAR model

is practiced regularly.

**Creating opportunities to learn from mistakes.** Simulation is a "no-error patient, no-error clinic" environment. The student is not afraid to make mistakes, he learns through debriefing.

**OSCE mini-stations prepared in the study.** During the study, the following OSCE mini-stations were developed, covering the most important segments of clinical processes:

**1. Emergency care algorithm**

**for polytrauma** – ABCDE protocol, bleeding control, immobilization.

**2. Emergency measures in anaphylactic shock**

- administration of adrenaline, airway protection, monitoring.

**3. STEMI “door-to-needle” 20-minute station**

– rapid ECG reading, reperfusion decision making, anticoagulants.

At these stations, the student demonstrated the following key clinical competencies:

- stress management
- correct application of the clinical algorithm
- team coordination
- instant communication
- ensuring patient safety

Thus, simulation training has proven itself as an educational technology that develops clinical training in a deeply integrative manner.

**Introducing debriefing technology. Debriefing** is an integral part of simulation training and is the most important pedagogical mechanism of the learning process. During the simulation, the student deeply analyzes the clinical actions performed, the mistakes made, the logical steps in decision-making, and the emotional reactions. In the study, this process was carried out based on the **“no-blame debriefing” model**. This approach ensures the psychological safety of the student and allows him to learn without fear of making mistakes.

is to analyze not the student’s actions, but the thoughts, decisions, and cognitive processes behind those actions. This approach significantly increases the learning potential of a simulation exercise.

**The main stages of debriefing**

**1. Emotional ventilation**

- Students openly discuss emotions they feel during the simulation, such as stress, excitement, fear, or uncertainty.
- serves to promote psychological recovery, reduce internal tension, and prepare for constructive thinking.

**2. Analysis and interpretation**

- The student and teacher together seek answers to the questions "what happened?" and "why did it happen exactly like that?"

- Clinical algorithms, the rationale for diagnostic and therapeutic decisions are discussed.
- This process strengthens critical thinking.

### 3. Constructive analysis of errors

- The student's actions are not evaluated, only analyzed.
- Without blaming, cause-and-effect relationships are identified: it is important to determine where the wrong decision came from.
- "Cognitive errors" (rash, anchoring, confirmation bias) are taught.
- The opportunity to learn from mistakes is maximized.

### 4. Planning for future practice

- The student formulates a clear answer to the question, "What will I do differently in this situation next time?"
- An individual development plan is created to improve practical skills .

High-quality organization of debriefing activates a number of important pedagogical processes in students:

- Emotional recovery: the student learns to manage stress properly .
- Strengthening of situational memory: events during the simulation process are remembered more deeply.
- Reappraising stress: the student perceives the situation as an opportunity for growth, not a threat.
- the ability to analyze one's own thoughts, reconsider problematic situations, and learn from mistakes is developed.

All of these processes create the necessary cognitive-psychological foundation for the formation of clinical competencies.

The results of the study showed that :

- As the quality of debriefing improves, **OSCE outcomes improve** .
- The in-depth and systematic debriefing increased the students' clinical thinking clarity, decision-making speed, and team coordination.
- The insights gained during the debriefing process helped students improve their ability to work under stress and avoid repeating mistakes.

Therefore, debriefing is one of the most important components that determine the pedagogical value of simulation training.

**Reflection**, as a subsequent stage of simulation training, is one of the most important pedagogical mechanisms that serves to deepen the practical training of students. The reflection process allows the student to analyze his own behavior, understand the basis for decision-making, identify the causes of errors , and plan future activities. **The DIEP reflection model was used** for students in the study .

is an effective structure that gradually introduces reflective thinking and helps students deeply analyze their clinical experiences.

#### 1) D — Describe

The student objectively records the situation that occurred in the simulation:

- What was the situation?
- Who participated?
- What clinical symptoms and signs were observed?

This stage aims to reconstruct the event with concrete facts, without emotional interpretations.

#### 2) I — Interpret

analyzes his behavior and decisions:

- Why was this decision made?

- What factors were predominant in clinical thinking?
- Where did the difficulty arise?

This process restores cognitive processes - attention, memory, accuracy, clinical logic.

### 3) E — Evaluate

The student assesses his/her strengths and weaknesses:

- What actions were optimal?
- Where was the mistake or omission?
- What knowledge and skills were missing?

This stage will highlight the key points of professional growth.

### 4) P — Plan

The student makes a clear plan for the upcoming practical session:

- What skills need to be developed?
- mistakes ?
- What training or exercises are performed?

This stage ensures that reflection is completed with a practical result.

**reflection journals** based on the DIEP model has developed a number of important competencies in students:

- The principle of consciously analyzing one's own mistakes - not studying without mistakes, but learning from mistakes - has been strengthened.
- Increased emotional stability - the student learned to manage their emotions.
- Self-management skills —consciously reviewing clinical decisions.
- Professional reflection — increased level of preparedness for future clinical situations.

significantly developed the student's ability to analyze, evaluate , and summarize clinical experience.

The results of the study showed that :

- The reflex index increased by 40% in the experimental group using the DIEP model
- As students completed DIEP journals, their decision-making reasoning, error detection, and consistency of clinical thinking improved dramatically
- In students with increased reflection quality:
  - Steady improvement in OSCE results,
  - decreased stress management scores,
  - situation assessment.

This confirms that the DIEP technology is an important pedagogical tool in the development of clinical training in the discipline of "Emergency Medical Care".

The integrated implementation of Simulation Training + Debriefing + Reflection technologies in the “Emergency Medical Care” training process comprehensively developed the clinical training of students. This approach has proven itself as a powerful pedagogical mechanism that simultaneously forms not only practical skills , but also the cognitive, affective, social and volitional competencies of the student.

Experimental studies have shown that this methodological complex has yielded the following significant results in the educational process:

**Increased speed and accuracy of clinical reasoning.** Students became more confident in assessing clinical situations, distinguishing symptoms, prioritizing interventions , and applying diagnostic and therapeutic algorithms. According to the results of OSCE stations , clinical reasoning accuracy improved by **25–30%** .

**The quality of decision-making under stress increased.** As students learned to work under high pressure during the simulation, their ability to make quick and sound decisions even in

conditions close to real-life situations was strengthened. This is evidenced by a significant decrease in the STAI score .

**Team coordination and communication are enhanced.** Teamwork, the SBAR communication model, role-playing , and coordination exercises help students:

- clarity of communication,
- sharing tasks,
- leadership,
- mutual aid

+30% increase in team performance checklists .

**Reduction in the number of errors.** Through debriefing and reflection, the student:

- not to hide the mistake,
- understand the reason,
- developing alternative solutions,
- plan one's activities

result , the number of repeated errors in simulation training **has decreased dramatically** .

**Increased emotional-volitional stability.** Breathing techniques, relaxation exercises, cognitive reappraisal , and reflection processes help students:

- stress resistance,
- internal stability,
- self-control,
- behavior in emergency situations

formed their competencies.

**The ability to quickly adapt to new clinical situations was formed.** The constant change of simulation scenarios and the increasing level of complexity taught students to adapt to new situations, quickly form clinical logic, and be prepared for various emergencies. This indicates the development of "adaptive clinical thinking."

The result is an integrative model of Simulation + Debriefing + Reflection technologies:

- quality indicators of clinical training,
- psychological and professional stability of students,
- practical training **has significantly increased** .

has raised the quality of the educational process in the subject of "Emergency Medical Care" to a new level , and it is advisable to widely introduce it in medical universities.

**Conclusion.** The results of the experiment clearly confirmed that the integrated use of simulation exercises, blameless debriefing and reflection technologies in the educational process is a powerful pedagogical tool for the comprehensive development of students' professional competencies. This approach is especially important in disciplines characterized by high risk and high stress, such as "Emergency Medical Care", and significantly strengthens the qualities of clinical thinking, collective decision-making, stress resistance and emotional-volitional stability of students.

Simulation exercises safely replicate real clinical situations and enhance the student's ability to make quick, consistent, evidence-based decisions. The blameless debriefing model increases the student's motivation to learn from mistakes, and the reflection process develops the skills to consciously analyze their own actions, understand cause-and-effect relationships, and plan future activities . The harmonious integration of these three simultaneously develops the student's cognitive, affective, social, and volitional competencies.

showed that the effectiveness of the methodology is not accidental, but statistically reliable : increased OSCE scores, reduced stress levels, increased team coordination, and increased levels of reflection confirm the scientific validity of this process.

Therefore, the widespread implementation of the integrative model in the "Emergency Medical Care" educational process will increase the quality of student training in line with real clinical requirements. This will not only contribute to the development of student competencies, but also to the improvement of the quality of medical services and ensuring patient safety in the long term .

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