

drug syringes and the use of an in-line intravenous flow measurement device allow automatic computer recognition of injected drugs and appropriate adjustment of vital and physical signs. Ventilators, defibrillators, rapid transfusion devices, anesthesia machines and other devices easily interface with the RPS.

Conclusion. Medical educators must respond to the ethical messages, policy directives, and practical challenges raised by the emerging patient safety movement. New curricula are needed to train providers more safely, inculcate safety culture, and better assess actual applied knowledge and skills. Simulation-based medical education is increasingly endorsed as an educational strategy. It allows health-care professionals to practice clinical skills within a safe learning environment, but requires devices for simulation or simulated patients, trained teachers, and an appropriate environment.

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## **THE ROLE OF USING SIMULATION EDUCATION IN PRACTICAL TRAINING OF MEDICAL STUDENTS**

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Confluence of various events recent events led to increased use of clinical simulations in the process of obtaining medical education. These factors include increased focus on safety patients, the need to introduce new training models based on on the internship, the desire to standardize the possibilities of education, which will be available upon request, and the need for practice and acquiring skills in a controlled environment. In addition, the literature is increasingly highlighting the benefits of clinical simulation, the validity of its use in medical education is confirmed.

What differentiates health care education from other courses in higher education is that it provides a vocational qualification, producing professionals who not only have substantial knowledge in their field, but are trained on how to apply this to provide a service. Health care education can be broadly split into two domains –the theory or knowledge, and the ability to apply this in a practical environment to help patients and work as a team. This practical application of knowledge is where simulation-based learning fits into health care education.

Simulation performance as and other teaching methods, depends on features of its use. Simulation should be applied in combination with clinical training, and its implementation in the curriculum should be well planned and focused on results.

Simulation trainings are the most effective if they become part of standard curriculum, and not its additional exotic component. Determining which component of the curriculum improves when using simulation, and implementing appropriate exercises into the existing model leads to a more focused and consistent use of the method. This approach further helps determine what personnel, equipment, premises and economic resources required for training.

Simulation is increasingly being used in medical education system for teaching individual students and groups on teaching cognitive, psychomotor and emotional skills.

- It is important to first determine expected results of use simulations and, based on them, introduce simulation into the curriculum.
- Feedback is critical to successful learning using simulation, it should be based on individual learning needs.
- Simulation allows you to train in a controlled environment, giving an opportunity to reflect on and evaluate the experience gained.

A key aspect of satisfaction with simulation training is that it provides students with the confidence to manage similar real-life scenarios. In many situations, confidence is directly linked to competence, for example, the robust communication skills needed when interacting with patients requires being able to handle the situation with confidence. The practice provided by simulation training

builds up confidence and hence satisfaction, as students would feel more competent to handle real-life situations in the future. The simulation training develops clinical decision-making abilities. So, one of the reasons for this is that, as students gain confidence, they are more comfortable in making their own decisions and exerting their autonomy. As well as confidence being essential for an individual, demonstrating confidence is important for the patients who have put a lot of trust in health care professionals.

Simulation-based learning has opened up a new educational application in medicine. Fact-based practices can be implemented using protocols and algorithms, which can then be put into practice using simulation scenarios. The key to the success of simulation learning is its integration into traditional educational programs.

Teamwork training conducted in a simulated environment can also provide an added benefit over traditional didactic instruction, increase productivity, and possibly also reduce errors. The cost-effectiveness of potentially costly medical education and simulation-based training needs to be studied in terms of enhancing clinical competence and its impact on patient safety. Perhaps with the adoption of simulation as a standard for training and certification, healthcare systems will become more accountable and ethical to the populations they serve.

It is clear that all training should take place under clear supervision and teacher supervision, although some simulators allow self-improvement of their skills, which significantly saves time in the teaching staff. Modern technologies have

one additional positive. It's about distance learning. Thanks to the Internet and the latest international programs, students have the opportunity to take courses at least at the level of viewing demonstration materials. Unique surgical operations, demonstrations of the latest equipment, including the appearance new simulation technologies can be viewed both online and in video recordings. This created an opportunity for additional self-study, increasing the level of their medical knowledge and awareness of innovations in their profession.

Thus, today the effectiveness of the educational process that forms professional competence, is realized through an effective combination of simulation, interactive and distance learning.

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## **VISUALIZATION APPROACHES IN MORPHOLOGICAL DISCIPLINES FOR DISTANCE AND COMBINED EDUCATION**

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Eric Gough in 1984 said: «It is the development of distance education as an academic discipline that will have the most profound effect on its practice in the future» [1]. We may confirm his thought now, as we see changes in quality and quantity of distance education services in higher education, especially during the pandemic era. To meet demands of nowadays medical science, higher medical education institutions should provide qualified and profound academic processes that are adjusted to technical and social conditions.

The Department of Histology, Cytology and Embryology has developed and implemented a list of simulating tools that facilitate the educational program of «Histology, Cytology and Embryology» course. On one hand, our aim was to provide online classes that cover the maximum theoretical base, and on another — develop practical skills that will combine analyses of histological slides, interdisciplinary integration by the means of simulation technologies. One of such tools is working with a digital histological database. Through the technical possibilities of the educational-scientific laboratory of Bukovinian State Medical University, we can prepare high quality histological specimens by applying common hematoxylin and eosin stains, as well as by using immunohistochemical methods and creating digital versions of microspecimens. The variety of material,