

Application of scenario simulation teaching in standardized training of anesthesiology residents

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Abstract: *Standardized residency training is an important stage for medical students to receive targeted education and training in professional disciplines after completing the basic education of the school, which is the main link of medical students' post-graduation education and learning, which can not only cultivate high-level medical talents, but also promote the progress of clinical medicine. The modern teaching and training mode is mainly based on scenario simulation teaching method, and actively carries out the optimization teaching mode based on intelligent technology and simulation materials, which can simulate the changes of life indicators during pheochromocytoma surgery, simulating human models, etc., and promote the improvement of anesthesiology medical thinking ability by strengthening the training and guidance of anesthesiology residents, so as to strengthen the combination of practice and theoretical knowledge, so as to ensure the comprehensive level of anesthesiologists in clinical practice.*

Keywords: *Residency; Anesthesiology; standardized training; Scenario Simulation; Application significance*

1. Introduction

During the training of hospital residents, it is necessary to ensure the independent decision-making ability and personal independent learning ability of the residents after the training, so that they can solve medical problems in time in the future. Especially the standardized training and guidance of anesthesiology residents, the clinical practice ability of interns is extremely important, once the anesthesiologist personal ability is insufficient, it will not only affect the life and health safety of patients, but also lead to the decline of the credibility of the hospital. At this stage, with the continuous progress of medical technology in China, it is required to pay attention to the quality characteristics, basic abilities and knowledge structure of new medical talents during the training period, adopt multi-level training teaching, based on the requirements and teaching objectives of medical education, and put forward existing problems and high-end simulator-assisted teaching methods during the training period, abandon traditional teaching methods, and clarify the implementation effect of scenario simulation teaching method. The following is a review of the problems and countermeasures in the education and teaching of anesthesiologists, and the specific implementation process and content of scenario simulation teaching method are proposed.

2. The significance of medical student training in anesthesiology

At this stage, under the changes in people's clinical needs, the field of medical teaching pays more attention to the regulation and education of talents, conducts in-depth analysis of what form to take for medical talent training, and achieves corresponding results. However, with the cross-level progress of higher education in China and the progress of the internationalization of medical education, the international community has gradually put forward the relevant standards of medical education, thus changing the way of medical and health services and medical models in recent years. However, China's medical education at this stage cannot meet the needs of social development, and there are great obstacles to the training of medical talents. In China's current stage of medical education, most of the newly graduated medical students are directly invested in the society, so that their own abilities cannot meet the clinical requirements, resulting in the serious impact of the career of medical students, and even irresponsible to society and patients. Once medical students do not go through systematic clinical training and direct work, it will lead to a serious imbalance in the level of treatment and diagnosis in the hospital,

most of the doctors with higher qualifications in hospitals have a high level of diagnosis and treatment ability, while the diagnosis and treatment level of doctors in primary medical institutions is poor, making China have the problem of "expensive to see a doctor" and "difficult to see a doctor". Anesthesia is a relatively special subject in the hospital, which has a strong specialization, requiring anesthesiologists to master sufficient basic knowledge and have a high level of practical ability. Therefore, according to the analysis of talent training at this stage, it is of great significance to implement scenario simulation teaching regulations for anesthesiology students, which is an important part of residency training.

3. The program of medical student training in anesthesiology

Under normal circumstances, anesthesiologist training is a 3-year standardized residency training in anesthesiology for clinical medical graduates, which is clinically called anesthesiology specialist training. After medical students obtain the "Certificate of Completion of Anesthesiology Residency Training and Certificate of Anesthesiology Specialist" after training, they can start working as anesthesiologists. In order to ensure the effect of the training of anesthesiology students, it is necessary to create a standardized resident training system with international ties during the above-mentioned training activities, and carry out corresponding training guidance for anesthesia students in the standardized training base for residents. The regular teaching content is mostly oral education or indoctrination teaching to guide anesthesiology students to understand the basic knowledge of anesthesia and operation knowledge, and does not teach according to the actual operation needs, resulting in interns being unable to directly apply to the clinic after learning. Scenario simulation teaching is to implement clinical education and teaching through the creation of typical cases, carry out theoretical knowledge and anesthesia skills learning in specific situations, understand the overall teaching content, and ensure learning enthusiasm. During the standardized training of residents, it is not only necessary to standardize the medical behavior of anesthesiologists, but also to strengthen pre-job training to ensure efficient, orderly and safe anesthesia treatment.

4. The specific content of anesthesia medical student training

During the actual standardized training and guidance of anesthesiology residents, medical students often have insufficient communication skills and poor service awareness, and they do not really communicate with patients and their families during their school studies, and cannot achieve active service, active service and good communication. In addition, what they learned during medical education is theoretical knowledge, and they have not carried out corresponding practical operations, resulting in poor clinical practical operation ability. At the same time, some students lack a certain sense of self-protection in clinical facing patients and their families, and do not have a thorough understanding of relevant legal knowledge and behavioral norms, resulting in many problems and disputes during practice. In addition, the traditional medical education method is relatively single, which cannot improve students' enthusiasm and initiative in learning, while the situational simulation teaching method is a relatively novel teaching method in clinical medical education, which guides students to learn basic knowledge and operation skills through simulated practical teaching situations, which not only improves students' learning enthusiasm, but also ensures the overall teaching quality.

4.1. Poor service awareness of trainees

Problem: After patients enter the operating room, most patients will have a sense of resistance due to the unfamiliar environment of the operating room, the low indoor temperature, and the fear of anesthesia and surgery. In the surgery of pheophiloma, there will be more serious hemodynamic fluctuations during treatment, which makes patients overly nervous and anxious, and some patients even have the danger of continuous rise in blood pressure, which poses a certain threat to the safety of surgery and life and health of patients. Most of the anesthesiology residents enter the clinical workplace for the first time, and lack certain work experience in the face of this situation, resulting in the inability to carry out corresponding services centered on patients, and it is difficult to communicate with patients with anxiety in a timely manner during communication with patients, resulting in an increase in the incidence of doctor-patient disputes.

Countermeasures: Medical teachers use high-end simulator models as training materials for anesthesiology medical students during the standardized training, encourage medical students to adopt amiable and polite language and behavior for human intervention, fully demonstrate the humanistic

qualities of anesthesiologists, guide anesthesiology medical students to communicate with patients in ways such as action incentives, language encouragement, and spiritual encouragement during the regular training, actively carry out preoperative visits, conduct service education on the simulator model, and evaluate the communication effect based on the changes in the vital signs of the simulator model. Repeated training is carried out until the medical student can grasp the relevant information and skills in a timely and accurate manner^[1]. Medical teachers through the use of simulator model training, not only can cultivate students' personal cultivation, character and morality, but also promote students' medical level and professional skills to rise, so as to strengthen the awareness of training students to save lives and help the wounded, so that they can establish high-quality medical ethics and medical style, and maintain an active and enthusiastic service attitude towards family members and patients, adhere to the concept of "patient-centered", so as to actively carry out warm medical humanistic care.

4.2. Trainees have little practical knowledge

Problem: During surgical anesthesia, there is no spare time for anesthesiologists to think about how to deal with critical illnesses in a critical condition, and anesthesiologists need to take emergency treatment in a few minutes or even seconds, and missing the optimal treatment time will lead to disability or death. Therefore, "critical care management" should be the core content during the standardized training of anesthesiology residents. Anesthesiology medical students have been influenced by the theoretical knowledge of books during their studies in medical schools, but they have little understanding of the quality of management of critically ill patients during anesthesia surgery, and cannot recognize the impact of anesthesia critical and critical care management quality on patient prognosis and surgical efficacy, and once improperly managed, it will even affect the life safety of patients^[2]. During the surgical treatment of patients with eophiloma, patients may fluctuate in circulating distance under the influence of treatment procedures, but this is limited to the understanding of theoretical knowledge, and no clinical reality is observed, and even the response to differences between patients during surgery is different. Compared with actual clinical cases, when the patient's hemodynamics change significantly, anesthesiology students will have confusion in thinking and behavior, and even cannot be quickly and skillfully treated urgently. For such patients, during the treatment period, the regular training teachers cannot directly let the anesthesia trainees carry out separate treatment, which makes it difficult for anesthesia inpatient medical students to carry out practical operations, and their ability to improve their personal emergency treatment ability is not obvious, and even cannot face the management of critically ill patients during surgery alone^[3].

Countermeasures: High-end simulated human pheocytoma surgery teaching by scenario simulation teaching method; Before the implementation of simulation teaching, it is necessary to review the basic knowledge and basic theory of anesthesia resident medical students, require inpatient anesthesiology students to deepen their understanding of the pathological characteristics and physiological characteristics of pheophilic cell tumor, clarify the important content of anesthesia management of such surgical patients, and understand the treatment of severe circulation fluctuations before tumor resection. Due to abnormal fluctuations in blood pressure during tumor exploration and isolation of patients with eophiloma, the level of catecholamines in the blood decreases rapidly, causing the peripheral blood vessels to expand rapidly, thereby inducing refractory hypotension, and shock symptoms in severe cases. During the teaching of the simulator model, the instructor needs to inform the patient of the importance of monitoring vital indicators during surgery, inform them of the need to prepare vasoactive drugs in time, so that medical students can understand how to use vasodilating drugs before tumor resection, and choose anesthetic drugs with strong controllability and short action time to help patients maintain the depth of anesthesia, so as to avoid long postoperative recovery time and refractory hypotension after the completion of surgery. After the operation is completed, the simulated human model has a rapid drop in blood pressure, and the instructor needs to guide the anesthesiology students to use the pressor drug for the patient in time and choose the appropriate time to stop the drug. During this period, anesthesiology students should be repeatedly trained in the ability to accurately supplement drugs to maintain the stability of the patient's internal environment^[4]. In general, typical anesthesia cases can be used after teaching high-end simulators during the standardized training of anesthesiology residents, guiding medical students to avoid potential anesthesia risks in time, and requiring medical students to use simulators as teaching materials for targeted processing, so that they can personally deal with clinical problems and ensure students' ability to find and solve problems. In addition, medical students are required to repeatedly carry out program simulation training, and adopt efficient and repeatable learning methods in line with the clinic during medical education, which is conducive to the training personnel to deepen their understanding of the important aspects of anesthesia management. During the high-end simulator-assisted teaching, it is necessary to meet the strategic requirements of building a high-quality,

professional and innovative teaching team proposed in the "China Education Modernization 2035" to ensure the overall teaching quality and improve the teaching effect^[5].

4.3. Poor awareness of self-protection among trainees

Problem: During the training of anesthesiology medical students, most medical students have not undergone systematic safety occupational protection training, resulting in them not fully aware of iatrogenic infection or iatrogenic injury through droplets, acupuncture and other routes during anesthesia operations, and even a certain fluke mentality^[6]. The anesthesiology department is one of the departments with a high risk of iatrogenic infection in the medical clinic, and once the safety protection is not in place and the emergency response ability is poor, it will lead to catastrophic injury to the medical students^[7].

Countermeasures: During the implementation of scenario simulation teaching, high-end simulator model teaching materials are used for teaching, and medical safety education and biosafety protection knowledge should be publicized before teaching, and anesthesiology students should be guided to actively comply with clinical operation diagnosis and treatment standards, and improve medical students' awareness of safety knowledge and protection. At the same time, during the training of simulated human models, it can be set that patients with eophilic cell tumors have infectious diseases, and anesthesia students can formulate correct operation procedures and emergency plans for medical students when performing anesthesia for patients, learn effective operation standard procedures, clarify the handling and recycling methods of disposable consumables and sharps, and gradually strengthen the self-protection awareness of medical students from teaching to practice, so that they pay attention to the protection of their own safety during clinical practice after the completion of the training. Under the leadership of professional instructors, once anesthesia students mishandle risk events, they have certain responsibilities, and the teaching teachers also need to bear corresponding legal responsibilities^[8]. Therefore, teaching teachers need to strengthen the guidance and training of anesthesiology students who are trained to understand the responsibilities and obligations during clinical teaching, and need to let go and not let go. Anesthesiology students, on the other hand, need to study carefully, actively exercise themselves, adhere to the concept of standardized behavior during clinical treatment, avoid clinical processing errors and risk events, and ensure the safety and effectiveness of treatment. In the event of an error or accident in performing anesthesia on a surgical patient alone without the permission of the instructor, the anesthesiology medical student shall bear the corresponding legal responsibility. Therefore, anesthesiology students need to follow the instructions during the internship and learn the relevant anesthesia treatment operations in accordance with the internship requirements and regulations in the hospital.

4.4. The learning initiative of regular trainees is low

Problem: The traditional teaching mode is mainly explanatory teaching or board book teaching, and the teaching teachers mostly adopt the method of centralized teaching to clarify the theory and textbook content, and do not interact with anesthesiology students, and the classroom teaching atmosphere is relatively quiet and dull, resulting in a decline in the learning initiative of medical students, low learning enthusiasm, making students unable to concentrate during class, difficult to fully understand the knowledge points of the textbook, even through rote memorization can not firmly grasp the knowledge points, and eventually lead to the loss of enthusiasm and interest in learning of anesthesia students.

Countermeasures: During the scenario simulation teaching, the implementation of high-end simulator teaching can combine theoretical knowledge and practical content, and the medical treatment effect needs to be understood through the change of model life indicators in clinical case simulation, which has a certain impact on the clinical thinking ability of anesthesiology students. During the clinical anesthesia management of patients treated by pheocytoma surgery, students can be guided to fully understand the relevant knowledge points of the disease and simulated patients, which is more specific than the traditional teaching method. Especially in the clinical treatment of cases, Medical Teachers guide the drawing to actively participate in the teaching behavior, enhance the enthusiasm of medical students for learning knowledge, and ensure the enthusiasm and initiative of medical students in learning^[9]. At the same time, even if the corresponding emergency treatment fails to save the life of the simulated patient in time during the training period, the instructor can still guide the anesthesiology students to maintain a good attitude and actively discuss with the teacher, diverge personal thinking, and find the best economic treatment, which can not only create a more relaxed and pleasant learning atmosphere, but also make the patient have a deeper understanding of the knowledge content. Clinical medicine is a life science with

high requirements for practical operation in the medical field, anesthesiology students need to use clinical cases to deepen learning on the basis of learning knowledge and theory, and after adopting simulation teaching, students can be required to use computers on a highly simulated model to completely restore the clinical case processing methods and important links, and clarify the optimal treatment of critically ill patients by asking about the actual situation of patients before anesthesia, so as to improve the cognition of anesthesia management and deepen the impression of patients' clinical treatment. This ensures that trainees enter the role of clinical anesthesiologists as soon as possible.

5. Assessment and evaluation of anesthesiology medical student training

After completing the training of anesthesiology medical students, it is necessary to strengthen the assessment and evaluation of medical students, and the content of training should be quantified during the assessment and evaluation, which is one of the important components of anesthesiology, covering clinical working days, technical operations learned, academic activities participated in and types of clinical cases. Regarding the assessment of the clinical ability of anesthesiology residents, the assessment of the clinical ability of anesthesiology students requires the instructor to evaluate the emergency response ability, communication awareness, service awareness, self-protection awareness, clinical technology, critical and critical disease management ability, medical ethics, comprehensive quality, personal cultivation, etc. of the anesthesiology resident medical students trained by the regular training on the basis of training. The implementation of department rotation assessment can enable anesthesiology students to contact a variety of types of patients, and when their rotation completes a department, the training effect is evaluated, and the corresponding assessment and performance records are made^[10]. In addition, the theoretical knowledge and English proficiency test of anesthesiology students are also extremely important, and in the implementation of professional theoretical knowledge assessment, there is not only a written test but also oral defense processing, so as to understand the thinking ability of anesthesia students, and the English assessment content is medical professional English.

6. Summary

Anesthesiology residents and graduate students are the first steps in the transition from students to professional clinicians. Due to the limited number of teaching hours and limited practice of anesthesiology during school, and the limitations of traditional teaching, students lack the knowledge of clinical theory and practical operation. When they formally contact patients, especially complex case types, students often feel helpless and fearful, which seriously affects their motivation. Based on this, in clinical teaching teaching, teachers should pay attention to the guidance of students' interest, find effective teaching methods, and stimulate students' enthusiasm for learning and work, so the research of teaching methods belongs to the current clinical hot topics. Scenario simulation teaching is a relatively new clinical teaching method, which guides students to learn basic knowledge, anesthesia skills, emergency treatment of critical and serious diseases, service awareness, self-protection awareness, communication skills, etc. through simulated practice teaching situations, which not only improves students' learning enthusiasm, but also ensures the overall teaching quality. At present, this student-centered teaching method has been widely applied and promoted in the field of medicine at home and abroad, and the effect is excellent.

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