

# The Current Problems and Optimization Suggestions of Undergraduate Clinical Medicine Talent Training

Yuelong Wang, Zepei Wu, Zhiyong Liu, Yunhui Zeng, Liu Yi, Jianguo Xu\*

Department of Neurosurgery, West China Hospital, Sichuan University, Chengdu, 610041, Sichuan, China

\*Corresponding author: xujg@scu.edu.cn

**Abstract:** This paper systematically analyzes the wide application and significant impact of new technologies in the field of clinical medicine, discusses the new challenges, requirements and tasks it brings to the cultivation of clinical medical talents, and integrates effective countermeasures and suggestions with the three stages of institutional education, postgraduate education and continuing education of clinical medical talents.

**Keywords:** Undergraduate; Clinical Medicine; Talent Training; Optimization

## 1. Introduction

The development of medicine in today's era is data-driven and technology-driven. New technologies such as big data, 5G, "Internet+" and AI are constantly making a huge impact on people's daily lives. In medical practice, new technologies have brought unprecedented impact to it and at the same time brought it more room for development. For clinical medicine to catch up with the development of new technologies, it is necessary to start from the most basic talents, constantly strengthen technical thinking, predict technical trends and pay attention to technical characteristics to achieve sudden and rapid development.

## 2. Emerging technologies in medical practice

Clinical medicine is a practical and pragmatic science that provides diagnosis and treatment to patients. Advances in technology and new technologies have had a profound impact and change on all areas of clinical medicine. In terms of its development history, from the beginning in developed countries such as Europe and the United States to the present large-scale promotion and reinvention, new technologies have been applied to all aspects of medical care and are the driving force behind the change and development of clinical medicine. Judging from the current situation, the development of new technologies, new medical tools, new models, new spaces, new medical models, and new spaces is constantly changing, which is bound to be a profound and extensive reform.

### 2.1 Emerging technology development drives diversification of clinical care modalities

With the continuous development of new technologies, clinical medical treatment is constantly moving toward intelligence, providing a way to better understand and address various medical conditions. For example, 3D reconstruction technology, as an emerging technology, has been widely used in the medical industry and has achieved good results in actual work. With a unique three-dimensional reproduction perspective, it enables patients to clearly see the lesion site and thus make the correct diagnosis and treatment. Another example is data mining, which is a scientific integration and refinement of complex medical data with scientific, comprehensive, holistic and high-value data and rules and is of great practical significance to clinicians in the diagnosis, treatment and research of conditions and diseases. [1]

### 2.2 A precision medicine model based on emerging technologies

Precision medicine has become a new medical model. Based on theories and technologies such as big data and cloud computing, we discuss how to effectively address new health environment challenges,

solve population health information problems, and promote medical and health system reform in the new medical environment. The online medical information system is interconnected. After synthesizing the information from clinical research, it is presented to lay the foundation for disease diagnosis and treatment and clinical application. Based on the establishment and improvement of the medical information system, a large amount of clinical experimental information has been established, sample resources have been enriched, and the Internet has been used for rapid application.

### ***2.3 Emerging technology development drives the realization of telemedicine***

Making new technologies increasingly the main driver of today's clinical development. With the support of modern communication technology, computer technology and network technology, remote diagnosis, remote monitoring, remote consultation, remote teaching, etc., provide a full range of services for the groups in need, highlighting its rapid development trend and unique advantages of real-time synchronization, speed and convenience, thus opening up a new dimension of development for clinical medicine. Its proposal provides a new type of medical service platform for the healthcare system, as well as an efficient, low-cost and easy way for stratified diagnosis in medical institutions and healthcare facilities. 5G networks have a large broadband performance that enables real-time audio and video image transmission, which can reach transmission rates of ten trillion times. At the same time, its low latency performance allows feedback from the body to be transmitted to the physician's touch device within microseconds. In 2019, Director Tian Wei of Beijing Jishuitan Hospital, with the help of China Telecom, controlled a surgical robot from Tiangui Orthopedics to perform surgery on two patients located in two areas with the help of 5G technology. This is a world first and a milestone for 5G technology in telemedicine. AI technology has gained increasing importance in the medical field, and it has penetrated all aspects of medical services. Developments in the field of AI include pathology diagnosis, eye diseases, skin diseases, cardiac monitoring, robotic surgery, tumor treatment, and other areas.

## **3. The impact of emerging technologies on medical talent development**

### ***3.1 Insufficient training of medical information technology talent***

With the rapid development of IoT technology, computer technology and sensor technology as well as 5G technology, the combination of clinical medical technology and high technology such as AI is getting closer and closer. With the development of information technology, the scope of technology is becoming increasingly wider, the technology demand is becoming increasingly personalized, and the technology threshold is increasing. However, at present, our clinical medical technicians are still lagging behind in the use of information technology and can only engage in some low-level work, without specializing or learning, regardless of the situation, which requires us to be courageous in exploring and innovating the use of new technologies [2].

### ***3.2 Lack of systematic medical technology training***

The lack of medical resources and the lack of continuing education for clinicians has resulted in a "formalized" teaching model in which credit is given only for attending or participating in academic conferences in the field. This form of teaching has not truly contributed to the development of information technology.

In the organization and operation of hospitals, there is a lack of comprehensive training and training for medical technicians. Take the workload of clinicians in a hospital specializing in mental health as an example: most of their work time is taken up by routine tasks that involve writing medical procedures, finding labs, filling out assessment scales, checking in and out, greeting patients' families, processing admissions and discharges, and other aspects of outpatient visits. Due to the busy work schedule, information literacy training naturally becomes a formality.

In addition, the establishment and operation of the hospital's information technology system mostly relies on third parties such as suppliers to complete, and the demand for IT personnel is limited to simple operation and maintenance, while the hospital is unable to create suitable working conditions for IT personnel, resulting in the loss and transfer of a large number of technical staff, thus making the development of information technology in the medical industry lack backbone support and a team of teachers.

#### 4. Recommendations for the training of clinical medical personnel to adapt to the development of emerging technologies

The existing medical personnel training model is influenced by the teaching content, teaching conditions and resource investment, teacher quality and educational philosophy, assessment methods, etc. The training model lacks plurality, and contextual teaching relying on the Internet lacks infrastructure investment and educational policy support. In the process of conversion from traditional teaching to information-based teaching, most medical schools do not pay enough attention to it and do not actively introduce successful models with high reference value. This paper proposes the following implementation plan for the medical personnel training model (as shown in Table 1).

Table 1: Main ways to realize the training of clinical medical professionals

Cultivation Fields	Theoretical Courses	Practical training
Basic Medical Knowledge	Clinical medicine courses, basic medicine courses, social medicine, medical psychology, and health science are offered.	Participate in lectures or practical activities
Communication Skills	Lectures related to medical sociology and doctor-patient relationship and communication skills	Participate in public service activities or club activities
Professional values and professional attitude	Medical ethics, legal foundation, and moral and ethical training	Social practice related elective courses
Information Management	Computer Class Courses	Practical training in computer research
Public Health and Health System	Health statistics, epidemiology, medical psychology and social medicine, etc.	Public Health Prevention Practice Activities
Clinical Skills	Diagnostic imaging (MRI and CT), general surgery, experimental diagnostics, etc.	Preemployment training and clinical internship for interns

##### 4.1 Highlighting the characteristics and applying innovation

Take application innovation as the hand, make full use of the medical advantageous discipline resources, improve the information education of the medical profession, promote the deep integration of medical education and informationization, build a medical practice education teaching system mainly to cultivate practical innovation ability, build an innovative medical practice education teaching system platform at all levels, achieve the establishment of a sound demand-oriented characteristic talent training mode, cultivate high-quality medical talents with medical literacy and information literacy, and promote the construction of practice with application demand. The university will establish a demand-oriented training model, cultivate high-quality medical talents with medical and information literacy, and promote the construction of practice with the application of demand.

##### 4.2 Consolidate the foundation of medical education informatization network resources construction

Medical schools should establish and improve the overall management mechanism and resource operation system of educational informatization, enhance the deep integration of "informatization technology" and medical education teaching, further improve the leading group and management organization of educational informatization under the responsibility of a hand, solve all kinds of specific problems in the process of educational informatization construction and application, and achieve in the process of development of medical education informatization, the construction and application are fully integrated to ensure that the work of medical education informatization in school education and teaching can be carried out in an orderly and smooth manner. [3]

##### 4.3 Actively explore the effective application mode of clinical education resources

On the basis of the above hardware and software construction, according to the advantages and characteristics of our university, we should form a medical personnel training mode of early application,

wide application and lifelong application of clinical education resources. Medical colleges and universities should actively cooperate with teaching practice hospitals to build a digital typical case library. In regular education and teaching, share the results of high-quality cases in digital hospitals and deeply explore the value of using electronic data in digital hospitals. On the basis of the electronic medical record system, a digital typical case library should be established, and typical medical records should be protected by personal information and categorized and stored in the shared data center of the typical medical record library to reserve rich electronic teaching resources for teachers, students and medical workers to access at any time to change the traditional and obsolete teaching mode and improve the effective teaching means for clinician training. After the establishment of the case library, some typical cases can be promoted and exchanged in the form of apprenticeship teaching, theoretical lectures and PBL teaching methods, which is significant for improving the medical level of doctors and the growth of their experience. [4]

Take advantage of information technology to promote the construction of moral education. In medical teaching, information technology should also be used to promote medical ethics education, and medical ethics education should be carried out throughout the development of information technology, standardize the student information management system, cover all kinds of student activities, student competitions, student social services and other information, strengthen the information management and support of student activities, implicitly complete medical ethics education, and form a healthy and positive campus culture with medical characteristics so that students can always strengthen the information management and support for student activities so that medical ethics education can be accomplished implicitly and a healthy and positive campus culture with medical characteristics can be formed.

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