

# Application and Practice of Medical Record System in Hospital Information Management System

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**Abstract:** As one of the important components of a hospital information management system, the effective application of a medical record system can improve the quality of medical service, accelerate the update of medical record information, and optimize the management and storage of medical records. Based on this, this paper will analyze the application advantages of medical record systems in hospital information management systems, and discuss the application strategy and prospect of medical record systems in hospital information management systems.

**Keywords:** Medical record system; Hospital information management; Application practice

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## 1. Introduction

In the Internet era, the application of information systems in the medical field is increasingly extensive, and hospitals have realized the importance of constructing information management systems. In this context, the hospital should actively explore the effective application and optimization of the medical record system, to improve the quality and efficiency of medical record management, facilitate the medical staff and patients to consult the medical record information, and create a more efficient, safe, and convenient medical environment.

## 2. The application advantages of medical record system in hospital information management system

### 2.1. Optimize medical record management and storage

Different from the management and storage of paper medical records, electronic medical records reduce the time and error probability of traditional manual writing of medical records through the automatic verification function of a standardized information entry system, which has positive significance for improving the accuracy of medical records. At the same time, the medical record system can also be connected with the hospital drug

management system, equipment management system, and other information management systems to achieve data sharing, making the electronic medical record more complete. In addition, electronic medical records are stored in the form of data, occupying a small physical space, and can be backed up and restored, which effectively reduces the risk of loss or damage that may occur in past paper medical records<sup>[1]</sup>. The electronic medical record system also supports a variety of formats of data storage, patients' diagnosis and treatment records, test images and results can be unified management and storage, convenient for doctors to search the patient's name, medical record number, and other keywords, quickly understand the patient's medical history, thereby improving work efficiency.

## **2.2. Accelerate the update of medical record information**

Under the traditional medical record management mode, the patient's medical information is often simple diagnosis and treatment results, lacking test image data. However, the introduction of a medical record system greatly improves the speed and accuracy of medical record information updates<sup>[2]</sup>. By logging in to the medical record system, doctors can instantly input and upload patients' medical record information and test results, without waiting for physical image results to be printed. The medical record system can also support cross-department collaboration. When patients need multi-department consultation, doctors in different departments can quickly share and view the patient's medical record information in other departments, thus avoiding the problem of lagging medical record information caused by delayed medical record information updates<sup>[3]</sup>. In addition, medical staff can also use the automatic reminder function of the medical record system to receive notification of the completion of the examination results of patients, to timely understand the latest status of patients, and to update the medical record information<sup>[4]</sup>.

## **2.3. Improving the quality of medical services**

Medical record systems can not only help doctors automatically identify and analyze patients' medical record information but also provide support for doctors' treatment decisions. It can also facilitate patients to seek medical treatment, such as through the patient side of the medical record system to view their medical record information, make an appointment, test results, etc., without waiting in line for a long time, thus enhancing patients' satisfaction with medical services. At the same time, patients can also better understand their own condition and treatment progress, and actively cooperate with the doctor's treatment work<sup>[5]</sup>. In addition, the hospital management can also rationally allocate resources for the scheduling of medical staff and the use of medical equipment through the corresponding data statistical analysis function in the medical record system, to provide patients with a better medical service experience. With the rapid development of information technology, the application of medical record systems has been extended to the field of telemedicine. Doctors can offer medical consultation and treatment suggestions to patients in remote areas across geographical restrictions, further expanding the coverage of medical services.

# **3. The application strategy of medical record system in hospital information management system**

## **3.1. Build the hospital electronic medical record integration platform**

In the information age, building a scientific and efficient hospital electronic medical record integration platform has become an important guarantee to improve the level of hospital information management systems. Firstly,

The electronic medical record integration platform should realize the interconnection and sharing of medical record data. Based on the hospital's outpatient system, inpatient department system, laboratory system, and other systems interwork, seamless docking between the data is achieved. In this way, no matter which department the patient goes to, the doctor can obtain the patient's medical records, examination results, drug use, and other complete medical history information <sup>[6]</sup>. This not only helps to reduce the workload of medical staff inquiring about patients' medical history but also helps medical staff obtain more comprehensive and accurate medical record information and improve the efficiency of diagnosis and treatment. Secondly, the medical record system usually has a strong data processing ability. Through advanced data mining and analysis technology, the system can conduct a more accurate and in-depth analysis of massive medical record data, to provide help for doctors to make treatment plans and diagnoses <sup>[7]</sup>. At the same time, the hospital management can also grasp the development direction of the hospital medical service according to the statistical results of the system's medical record data, and adjust and optimize the medical operation management and medical resource allocation. In the process of building the hospital electronic medical record integration platform, both the hospital management and medical staff should pay attention to the safety and practicability of the medical record system <sup>[8]</sup>. According to the needs of different users, the corresponding access and access rights of electronic medical records should be set up to prevent data leakage or unauthorized access. Continuously improve the rationality of the interface design of the medical record system and optimize the platform function module according to the diagnosis and treatment process, so that doctors can quickly grasp the health status of patients.

### **3.2. Improve the data access function of the medical record system**

Data access is the most basic function of the medical record system, which is particularly important for improving the hospital information management system. Therefore, the data access function of the medical record system must be in line with the needs of doctors, with strong convenience, to better provide the quality of doctors' diagnosis and treatment work and meet the needs of patients. Based on this, the hospital can adopt the following strategies to improve the data access function of the medical record system. First of all, the hospital can introduce more advanced algorithm technology and optimize the search engine so that doctors can quickly and accurately retrieve the required medical record information. The classification of the existing medical record system database is optimized to ensure the high efficiency and security of medical record data <sup>[9]</sup>. This requires the medical record system maintenance personnel to upgrade the system algorithm or data model in time to ensure that the medical record data is stored in the appropriate format, and according to the corresponding indexing strategy, when the search is quickly completed. For example, by using the statistical function of the medical record system, the medical staff can know the number of medical records completed by the hospital's recovery, sorting, archiving, shelving, and other work; The number of disease diagnosis codes completed in all discharge medical records; The number of surgical diagnosis codes completed in all discharge medical records; The number of hospital records reviewed; The number of medical record information inquiries and copies of medical records received. The national hospital quality monitoring system and the local medical insurance bureau are completed to carry out DRG payment on time every month, to ensure that the HQMS and DRG platform data upload rate of 100%. In addition, through the use of data mining and machine learning algorithms, the medical record data were deeply analyzed. Doctors will not only gain a better understanding of patients' conditions but also be able to support clinical research. At the same time, hospitals can also establish standardized data exchange protocols to share and exchange medical record information with other hospitals and medical research institutions, which will

play a positive role in cross-institutional cooperative treatment and telemedicine consultation <sup>[10]</sup>.

### **3.3. Use the Internet of Things technology to strengthen medical record information management**

In the information age, the rapid development of Internet of Things technology provides technical support for the improvement of hospital information management systems. The application of the Internet of Things technology to the medical record system can effectively improve the real-time and accuracy of medical record information, and then enhance the function and service of the hospital information management system. First of all, medical personnel can collect, transmit, and process the test results of intelligent medical equipment with the help of Internet of Things technology. In the medical record system, these devices can monitor patients' vital signs, drug use, examination results, and other information in real time, and automatically upload them to the medical record system, thereby reducing errors and delays in manual input. Secondly, medical staff can use the Internet of Things technology to achieve remote access to and control of the medical record system. Doctors and nurses can access the latest medical record information of patients anytime and anywhere through mobile devices or other terminals, adjust treatment plans in time, and facilitate the sharing and cooperation of cross-department treatment plans, which greatly improves the system and collaboration of medical services. In addition, the Internet of Things technology can also help hospitals better manage medical resources <sup>[11]</sup>. Real-time monitoring of medical equipment through smart devices can effectively prevent equipment failures, reduce medical errors, and reduce maintenance costs. At the same time, the analysis function based on data algorithm technology can realize predictive maintenance, to optimize the allocation of medical resources and improve the efficiency of hospital operations. In this process, security is the key to the application of IoT technology in the medical record system. Since medical record information involves personal privacy, it is crucial to ensure the security of data transmission and storage. Hospitals should adopt encryption technology, access control, identity authentication, and other means to prevent data leakage and unauthorized access to medical records and protect patients' privacy <sup>[12]</sup>. In the process of daily storage and use of medical records, medical staff log in to the medical record system through account password or identity verification, and patients search medical records by entering corresponding numbers.

### **3.4. Conduct training on the operation of the system for medical staff**

The proficiency of medical staff in using the medical record system has an important impact on the improvement of the quality of medical services. Therefore, hospitals should organize medical staff to carry out system operation training to improve their system operation skills. First of all, the training objectives and contents should be clearly defined. Training medical personnel in the basic information entry, modification, inquiry, statistics, and other operational processes, to ensure that medical personnel can master the functions of the medical record system. The medical personnel should know how to use the medical record system to promote information sharing and cooperation between different departments in the hospital. At the same time, strengthen the training of medical staff's information security consciousness. Through the training of data encryption, access control, and other security mechanisms of the medical record system, the awareness and ability of medical staff to protect patients' privacy should be improved. Secondly, scientific training plans and programs should be formulated. Hospitals should conduct training at different levels according to the post needs and skill levels of medical personnel. For example, for clinicians, the training should focus on how to use the medical record system to



complete the writing of medical records, inspection, and reference. For managers, they focus more on system management and data analysis. In actual training, medical personnel can quickly and efficiently master the use of the medical record system through theoretical explanation, on-site demonstration, practical operation, and other ways. At the end of the training, the medical personnel are regularly assessed to check the training effect. At the same time, collect the use of medical staff feedback, and then constantly improve the training content and methods<sup>[13]</sup>. In addition, with the continuous upgrading of the medical record system and the continuous enrichment of medical record data types, the training content should also be updated in time to adapt to the new medical record system function and operation requirements.

## **4. The application prospect of medical record system in hospital information management system**

### **4.1. Strengthen information security management**

With the rapid development of information technology and the deepening of the application of hospital information management systems, the medical record system is facing increasingly severe information security challenges. Therefore, strengthening the information security management and ensuring the safety of medical record data has become a key part of improving the quality of hospital information management system. First of all, the hospital should establish a sound information security management system to ensure the safe use of the medical record system. This includes but is not limited to the formulation of scientific and reasonable information security policies, standards, and use procedures, the definition of information security responsibilities, and regular information security education and training for medical staff. This is to improve the information security awareness of all medical personnel and reduce the risk of information disclosure caused by negligence or misoperation. Secondly, the use of advanced technical means to strengthen the medical record system security protection<sup>[14]</sup>. For example, the implementation of data encryption technology to ensure the security of data in the process of storage and transmission; Deploying intrusion detection systems to monitor and prevent unauthorized access; And the use of multi-factor authentication mechanisms to enhance the security of authentication. Finally, hospitals should regularly back up data in their medical record systems and store the backup data in a secure location so that it can be quickly restored in the event of data loss or system failure, minimizing the impact on medical services.

### **4.2. Promote the standardization of medical record data**

Standardized medical record data is of great significance for the optimal allocation of medical resources and inter-department collaboration. By establishing a unified data format and coding rules, the hospital can make the information exchange between different departments smoother, and the patient's medical records can also be seamlessly connected, effectively improving the continuity of medical services and the accuracy of treatment. In practical application, hospitals can promote the standardization of medical record data through the following measures: First, develop scientific data standards. Hospitals should combine advanced experience at home and abroad to formulate data standards and coding rules for medical records systems for different types of medical information such as clinical records, inspection results, and drug prescriptions. Second, strengthen the implementation of data standards. The formulation of clear standards is only the first step. Hospitals also need to strengthen medical staff's understanding and implementation of medical record data standards through training and guidance. Third, the use of technology to promote standardized practice. Hospitals should introduce the

latest Internet of Things technology, big data technology, and other advanced algorithm technology to conduct standardized processing and analysis of medical record data and improve the level of automation and intelligence of data processing.

### 4.3. Improve hardware facilities and databases

With the increasing amount of medical record data, the existing server of the hospital may not be able to meet the needs of the medical record system for fast reading and writing due to memory limitations. Therefore, the processor, memory, and storage equipment of the server should be upgraded regularly. For example, higher performance CPU, larger capacity RAM, and SSD hard disks are used to improve the data processing speed and response time of the medical record system<sup>[15]</sup>. In addition, to ensure the stability and security of data transmission, hospitals need to build a stable and efficient network environment. For example, by introducing a high-speed network connection, the data transmission delay can be reduced and the stability of data access in the medical record system can be improved. In addition, the database is the core of the medical record system, and its performance directly affects the operating efficiency of the whole system. The hospital should adopt an advanced database management system to improve the efficiency of data storage, query, and backup of the medical record system. At the same time, the hospital should also regularly adjust the database index, clean up debris and other optimization and improvement, and regularly scan the medical record system for security loopholes, strengthening network security protection.

## Disclosure statement

The author declares no conflict of interest.

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