

# Research on management strategy of hospital medical records under the background of big data

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**Abstract:** With the continuous development of information technology, our country gradually entered the era of big data. In the background of this era, good data analysis activities can be carried out with the help of big data technology to provide convenience for people's lives. As an important part of social affairs, hospitals need to keep up with the pace of big data era and carry out good medical records management activities. Starting from the background of big data, this paper analyzes the measures of hospital medical record archives management to accumulate experience for the modern development of hospitals.

**Key words:** Big data; Hospitals; Medical records management

## Introduction:

Hospital medical records record the real health information of patients with the help of observation, treatment and other activities. In the contents of the medical records, it involves the diagnosis of the patient's condition, the analysis of the results and the accumulation of the treatment plan. Medical records are the crystallization of the collective wisdom of hospitals, which not only has the basic nature of medical records, but also can provide good services for medical research, diagnosis and other activities.

## 1. Construct electronic medical records and strengthen digital construction

With the continuous development of time, the traditional medical record management mode has many prominent problems, such as limitations and blindness, and it is impossible to view the information of various medical records. Therefore, it is necessary to carry out good file management activities through the flexible application of computers, and carry out digital management innovation with the help of different forms of intelligent retrieval technology, so as to ensure the labor force. To promote the efficiency of medical records resource service is to point out the direction for the development of medical records.

### 1.1 Electronic medical record system construction

**System architecture design:** System architecture design is very important when building an electronic medical record system. Scalability, stability, and security of the system should be considered. The system is divided into data layer, application layer and display layer to realize effective data management and fast information retrieval. The data layer should use efficient database technologies, such as relational databases or NoSQL databases, to meet the needs of different types and sizes of data storage. At the same time, data redundancy and data backup policies should be adopted to ensure data security and reliability. The application layer should design flexible business logic to realize the functions of inputting, inquiring and modifying medical records data. The modular design can be used to decompose different functional modules into independent services for subsequent expansion and maintenance. The display layer should be designed with a simple and intuitive user interface, so that doctors and medical personnel can quickly locate the required information. A responsive design should be adopted to accommodate devices of different sizes and resolutions to provide a good user experience.

### 1.2 Data acquisition and entry

Data acquisition and input is an important link in the construction of electronic medical record system. A variety of means, including automated data acquisition and manual data entry, should be used to ensure data integrity and accuracy. Automatic data acquisition can be connected to other information systems of the hospital, such as hospital information management system, laboratory information system, etc., to achieve automatic data extraction and synchronization. At the same time, intelligent sensing devices, such as smart medical sensors and wearable devices, can be used to monitor patients' physiological parameters and health status in real time, and the data can be directly input into the electronic medical record system. For manual data entry, it is necessary to establish a standardized data entry process and a standardized data entry interface, and train medical personnel to be skilled in operating the system to ensure the accuracy and consistency of data. At the same time, the data verification and audit mechanism can be used to monitor and verify the input data in real time, and discover and correct the wrong data in time.

### 1.3 Data format standardization

In order to realize cross-system and cross-platform information communication and sharing, it is necessary to standardize the format of medical record data. International medical data standards such as HL7 (Health Level Seven) and DICOM (Digital Imaging and Communications in Medicine) can be adopted. The data structure, coding standard and data exchange format of medical record data are specified. At the same time, it can also develop internal data standards and norms, unify the naming and coding rules of medical records data, and ensure data consistency and comparability between different departments and systems. In addition, data dictionaries and metadata management mechanisms should be established to record data definitions and attributes, providing support for data management and analysis.

#### 1.4 Information exchange and sharing

In order to realize the information sharing among different departments in the hospital, a cross-departmental information sharing mechanism should be established. Through the unified data interface and standardized data format, the data exchange and sharing between different systems can be realized. At the same time, a data integration platform can be established to integrate the information of various departments into a unified data warehouse to provide support for hospital management and decision-making.

In order to realize the interconnection of electronic medical records between different hospitals and medical institutions, it is necessary to develop uniform standards and protocols. International standards such as HL7 and Fast Healthcare Interoperability Resources (FHIR) can be referenced to specify the exchange format and communication protocol of medical record data. At the same time, an electronic medical record exchange platform can be established to provide safe and efficient data exchange services and promote the development and application of medical information.

#### 1.5 Data quality management

During the data entry and collection process, there may be incomplete, duplicate or incorrect data. In order to ensure the quality of the data, it is necessary to perform data cleaning and integration. Data cleaning tools and algorithms can be used to de-duplicate, fill and correct data to eliminate noise and outliers in the data. At the same time, we can also use data mining and machine learning technology to find the correlation and law between data and improve the use value of data.

The accuracy of data is one of the core requirements of electronic medical record system. In order to verify the accuracy of the data, data comparison and verification technology can be used to compare the data in the electronic medical record system with the original data to ensure the consistency and correctness of the data. At the same time, it can also establish a data audit and audit mechanism to regularly review and inspect the data, timely discover and correct the wrong data, and ensure the quality and reliability of the data.

## 2. Optimize the security management mechanism to ensure file security

Hospitals need to pay attention to the construction of medical record file security management mechanism to ensure its safe and effective operation. At the same time, management activities can be implemented based on relevant operational information to build a security risk early warning system to ensure the reliability of medical records.

#### 2.1 Data security hardening measures

In order to ensure the security of electronic medical records, advanced data encryption and decryption technology should be adopted. Sensitive data can be encrypted using symmetric or asymmetric encryption algorithms, and keys can be securely stored and distributed using key management systems. At the same time, you can also use the method of data segmentation encryption, the data is divided into multiple parts for encryption, to improve the security of data. In practical applications, it is necessary to select appropriate encryption algorithms and strategies based on specific requirements and system architecture. During data transmission, to prevent data from being stolen or tampered with, secure transmission protocols should be used. For example, the SSL/TLS protocol can be used to encrypt and authenticate data, ensuring the security and integrity of data during transmission. In addition, secure communication technologies such as virtual private networks (VPNS) can be used to establish secure network connections and prevent data from being intercepted by attackers during transmission.

#### 2.2 Permission management and access control

In order to ensure the security of electronic medical records, detailed permission management and access control should be implemented. Users in different roles should be given different permissions to access only the data within their responsibilities. The role-based Access Control (RBAC) model can be used to classify users into different roles and assign corresponding permissions to each Role. At the same time, you can also use access control mechanisms such as access control lists (ACLs) or attribute based access control (ABAC) to perform fine-grained control over user operations. In order to monitor and track users' access behavior to electronic medical records, an access audit and tracking mechanism should be established. Log in, view, modify, and delete operations, including operation time, operator, and operation content. By analyzing and reviewing audit logs, you can discover abnormal access behaviors and security events in a timely manner and take appropriate measures. In addition, behavior analysis and anomaly detection technology can be used to automatically identify and alert potential security risks.

#### 2.3 Network security protection

In order to protect the electronic medical record file system from cyber attacks, network security facilities should be strengthened. Firewalls, intrusion detection systems (IDS), and intrusion prevention systems (IPS) can be configured to detect and prevent malicious attacks in a timely manner. At the same time, network isolation technology can be used to isolate the electronic medical record system from other networks and reduce the attack surface. In addition, security patches for network devices should be regularly updated to fix known vulnerabilities and reduce the risk of system attacks. In order to find and repair vulnerabilities in the system, vulnerability scanning and patching should be performed regularly. You can use the vulnerability scanning tool to conduct comprehensive vulnerability detection on the system and find potential security risks. Once a vulnerability is found, take appropriate remedial measures in time, such as installing patches and upgrading software versions. At the same time, vulnerability management and vulnerability response mechanisms should also be established to track vulnerability repair in time to ensure the security and stability of the system.

#### 2.4 Disaster recovery and emergency recovery

In order to cope with disaster situations such as data loss or system failure, a comprehensive data backup and storage strategy should be established. You can back up critical data to reliable media, such as tape libraries and cloud storage, using both periodic and incremental backup. In addition, you need to plan a reasonable backup period and retention period to ensure the availability and integrity of backup data. In addition, you should regularly test and restore data backup to verify the effectiveness of the backup strategy. In order to ensure the rapid recovery of the electronic medical record file system after a disaster, disaster recovery drill and emergency plan should be made. Disaster recovery drills can be organized regularly to simulate various disaster scenarios and test the recovery capability and emergency response mechanism of the system. At the same time, a detailed emergency plan should also be formulated to clarify the handling process and responsible persons of various disaster events, so as to ensure that timely and effective measures can be taken to cope with and recover from disasters.

#### 2.5 Staff training and awareness raising

In order to raise employees' awareness and awareness of information security, security training and education activities should be organized regularly. The content of training may include information security policies, operation norms, risk prevention knowledge, etc. Training forms can be diversified, such as centralized training, online learning, security knowledge competitions, etc., to stimulate the learning enthusiasm and participation of employees. In addition, an assessment mechanism for employee security training should be established to encourage employees to actively learn and master information security knowledge. In order to strengthen the safety awareness of employees, safety awareness publicity and strengthening activities should be carried out regularly. Security tips and warning information can be issued through internal publications, bulletin boards, corporate emails and other channels to remind employees to pay attention to security risks and preventive measures.

### 3. Closing remarks

To sum up, in the era of big data, hospital archives management has ushered in opportunities and challenges for development. In order to better seize the opportunities, hospitals need to pay attention to the construction of electronic medical records, the optimization of security management mechanism and other measures to realize the flexible application of big data technology. Starting from the era of big data, the hospital has taken relevant measures to better manage patient information, achieve good management results, and provide protection for patient information security.

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#### Fund Project:

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