Design and Implementation of Home Data Reporting of Medical Records in Hospital Quality Inspection System

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Keywords: Hospital Quality Monitoring System; Family Data Reporting of Medical Records; System Design

Abstract: The hospital quality inspection system (HQMS) is a direct reference for the medical service inspection information network operated by its medical management department. This improves the hospital's medical quality management level and the design of the family data reporting system for medical records. According to the software design process, this paper uses a unified modeling language to analyze the functions of the data reporting system, selects case diagrams of related modules, defines models related to user types and business needs, and builds a hospital quality inspection system. The experimental results here show that, in the hospital quality inspection system, the Web-based medical record family data reporting effect is more effective than the traditional data reporting index. Its reporting efficiency is improved by 19% and the reporting fault tolerance rate is increased by 15%.

1. Introduction

With the rapid development of China's economy, the medical and health industry has also developed rapidly at an unprecedented speed [1]. The people's requirements for hospitals have also been improved with the improvement of economic conditions. For example, people have begun to pay more attention to the improvement and improvement of medical quality [2]. At the same time, hospital managers have begun to pay more attention to strict requirements on medical quality under the competitive mode of market mechanism [3]. With the rapid development of my country's socialist market economy, the medical and health industry has gradually integrated into the tide of market economy competition [4]. Various medical institutions put more energy on the improvement of economic benefits, while ignoring the quality of medical care, especially the quality of medical services [5-6].

Safdari R uses the existing pre-hospital management system to analyze the pre-hospital emergency process, and uses the sequence diagram in the Rational Rose software to model the framework and the extraction process [7-8]. Through the component diagram, combining the main system participants and logically dividing the business functions, the main agents of the system are identified and modeled, and finally the conceptual architecture of pre-hospital emergency management is proposed. But because the process of proposing component diagrams is too complicated, the results are not very accurate [9].

The innovation of this article lies in the realization of the design of the medical record homepage data reporting system based on the in-depth understanding of the related work of hospital quality inspection and the use of network information resources [10].

2. Method for Reporting Data on the Homepage of Medical Records in the Medical Quality Inspection System

2.1 Medical Quality Evaluation Standards

Medical quality evaluation has always had no unified content, which is a relatively complicated issue. Many scholars at home and abroad generally believe that the evaluation of medical quality

should first be based on the principle of minimal harm to patients and providing good services to patients, and secondly the economic benefits and economic losses of the medical process. This broad concept of quality emphasizes the patient-centered service concept, improves the level of medical technology, improves the efficiency of medical resource utilization, and improves the subjective satisfaction of patients. Medical quality evaluation can also be summarized as: a comprehensive evaluation of medical technology and medical management.

Medical quality is a combination of structure, process and results, providing patients with the most suitable health conditions with the lowest risk and cost. This theory is generally recognized by the international hospital management academic circles and has become one of the common evaluation methods in the international society today. The basic point of view is: structure (ie, basic quality) measurement reflects the scale of medical services provided and the level of medical skills; process (ie link quality) measurement reflects the medical intervention behavior and rationality of patients; outcome (ie terminal quality) measurement Reflect the results of medical intervention. The following is an analysis of the basic quality, link quality, and final quality of the actual situation and organizational structure of The Second affiliated hospital of Qiqihar Medical University.

Basic quality measurement refers to the comprehensive evaluation of the hospital's scale, financial resources, equipment, and facilities. The main contents are: whether the establishment of the hospital's various rules and regulations is sound, whether the medical facilities are complete, the advanced nature of medical equipment, the level of medical research and diagnosis and treatment technology, etc. Basic quality often runs through the beginning and end of quality management.

Link quality measurement refers to the measurement of the process activity quality of all clinical medical work and medical behavior of the hospital. The main content includes: the implementation of diagnosis and treatment rules and regulations, the standardization of patients' medical treatment, the standardization of doctors' diagnosis and treatment operations, and so on. Link quality is the direct object of medical quality control and management.

Final quality measurement refers to the feedback and evaluation of the diagnosis and treatment process and diagnosis results of the patients in the hospital. The main contents include: clinical treatment rate, improvement rate, untreated rate, mortality rate, average medical care, average medical expenses, etc. The final quality is the result of the combined effect of the basic quality and the connection quality. At the same time, the final quality also affects the basic quality of the connection. When the basic quality is available, this system effectively monitors the quality of the medical quality according to this evaluation criterion, thereby affecting the final quality.

2.2 Realization Process of Data Docking on the Home Page of Medical Records

The data link has very high requirements on the hospital's informatization and management level. The competent departments must be guided by their respective responsibilities and coordinate the work of each department. After receiving the notification from the Medical Department, the medical department of our hospital immediately established a data reporting team under the charge of the dean in charge, and organized the medical department to report data jointly by the Information Management Department, the Information Technology Department and the Medical Records Department.

(1) The medical office and information management office are responsible for the overall planning and guidance of data reporting, discovering problems and solving them in time.

(2) After receiving the data link test account, data interface template and other documents, organize the IT department software programmers to design and develop the data link program and software development manual according to the data interface template, and automatically upload the information to the original page at the specified time every day , Which has been converted to the test system.

(3) The medical archives statistics department uses the data link test account to connect to the test system to view the data link status and feedback reports. According to the problems in the reported opinions, the information in the original page system of the medical files is modified to ensure that such problems no longer occur.

(4) After the records transmitted to the test system have passed the system evaluation for 8 consecutive days, the information management office will receive the official user name and account number of the data link system, and start to upload the data officially.

3. Data Reporting Experiment on the Homepage of Medical Records

3.1 Data Collection

Implement the medical record home page information collection system of various medical institutions at all levels and unify the medical record management system. The overall goal of the system construction is to collect and standardize medical record homepage information of various medical institutions at all levels in the province, basic statistical analysis, unify the interface standards and data exchange standards with the HIS system, and unify-data collection and reporting standards and service interfaces , Solve the problems of multiple reporting, duplication, and collection. Improve the quality of data collection.

In order to ensure the quality of the collected data on the first page of the medical record, the quality of each reported first page of the hospitalized medical record is analyzed, mainly for completeness evaluation, logical evaluation, and normative evaluation. Finally, the evaluation conclusion and cause analysis are drawn. By formulating corresponding review conditions and a data quality monitoring system, the quality of the reported medical record homepage data will be scored.

3.2 Construction of Medical Record Homepage Management System

Taking into account the different conditions of primary medical institutions and medical institutions at the county and city level, it is preliminarily determined: the medical record management system is implemented in two modes, the local mode medical record homepage management system for institutions at the county level and above and the regional platform based on the county level. There are two parts of the home page collection and management system of medical records in primary medical institutions.

The functions of the two-mode medical record homepage management system mainly include: medical record creation and editing, quality management (standardized maintenance and review), archiving and storage, query and statistical analysis, standard interface and exchange (interface for HIS, for provincial platform Data exchange). As shown in Figure 1:
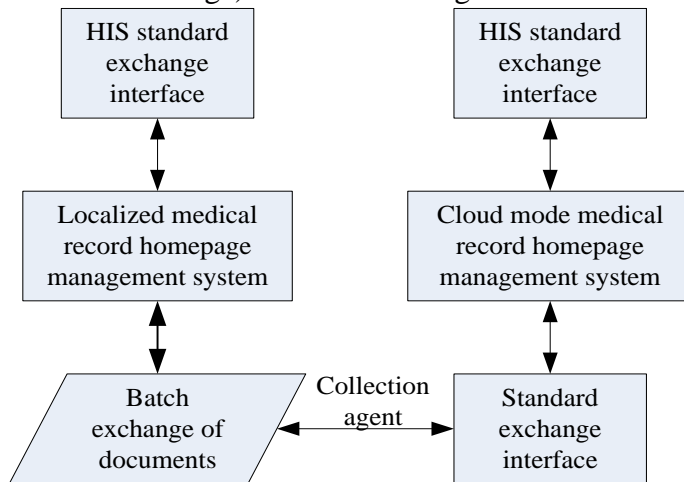

Figure 1. The overall functional framework of the system

4. Data Reporting on the Home Page of Medical Records in the Hospital Quality Inspection System

4.1 Status Quo of Medical Quality

The current health statistical investigation system limits the collection of medical records on the first page of hospitals above the second level and hospitals with more than 500 beds, while other hospitals, township health centers and community health service centers that set up beds do not require the collection of medical records on the first page. The incomplete collection of information on the home page of medical records cannot provide comprehensive data support for hierarchical medical management and patient flow analysis. At the same time, it lacks information on hospitalization in primary medical institutions.

In July 2018, our hospital did not use the new medical record homepage or the medical record system was not upgraded in time, the medical record homepage information standard was not uniform, and the interface cost was expensive. The report rate of the medical record homepage of the second and above hospitals in the province was less than 40%.

Through sampling and analysis of the data on the first page of the reported medical records, the quality of the data on the first page of the reported medical records in our province is poor, which is mainly reflected in the serious lack of items, such as the lack of key information such as payment method, gender, age, and the main diagnosis of discharge; filling is not standardized, The data to be filled is not in the coding range; there are many extreme data, such as filling the birth weight of newborns as "2", "2.9", etc., and the unit "gram" is regarded as "kg"; the data is filled in randomly, such as the identity Fill in the certificate number and telephone number as "0", etc. The information on the front page of the reported medical record is not of high quality and cannot be analyzed and utilized.

In modern times, the importance of quality in my life is self-evident. The quality of life of the people and the quality of life depend on quality management, quality supervision, and normal economic and social development are also inseparable from quality management. At the same time, all industries need to survive and develop in quality competition. The hospital's medical quality management should also conform to the tide of quality competition, build a patient-centered medical quality management system, establish the concept of medical services, focus on quality management of medical links, strengthen total quality management, and establish a comprehensive and multi-level management system. Hospital quality management goals have gradually entered the world's advanced ranks.

4.2 Data Reporting on the Home Page of Medical Records

With the rapid development of information technology, information management methods have become one of the key factors affecting the development of enterprises and institutions. Over the years, with the continuous expansion of hospital departments and the increase in the number of doctors, the number of forms and documents has also increased. In this way, it is necessary to systematically classify and record data information, such as personal information of medical staff, scientific research team information and medical resource information. For the time being, administrative documents are issued, medical staff collect information and data at work, and form filling and reporting are done through traditional manual records, telephone confirmations and email notifications. In view of more and more formats and files, traditional information entry methods can no longer meet the requirements of units for rapid and accurate information processing. How to improve the utilization efficiency of hospital resources, reduce the daily workload of medical staff, and establish a standardized, effective and safe data reporting system has become an urgent matter that the system must solve.

Compared with the traditional data reporting system, the Web-based data reporting system proposed in this paper has greatly improved the efficiency of data reporting, the fault tolerance of data reporting, the accuracy of data and the coordination of data reporting. The specific changes are shown in Table 1:

Table 1. Changes in the effect of web-based medical record homepage data reporting

Attributes	Effectiveness	Fault tolerance	Accuracy	Coordination
Traditional	63%	76%	67%	77%
Web	82%	91%	78%	88%

In order to see the change of the effect more intuitively, the table is drawn into a graph, as shown in Figure 2:
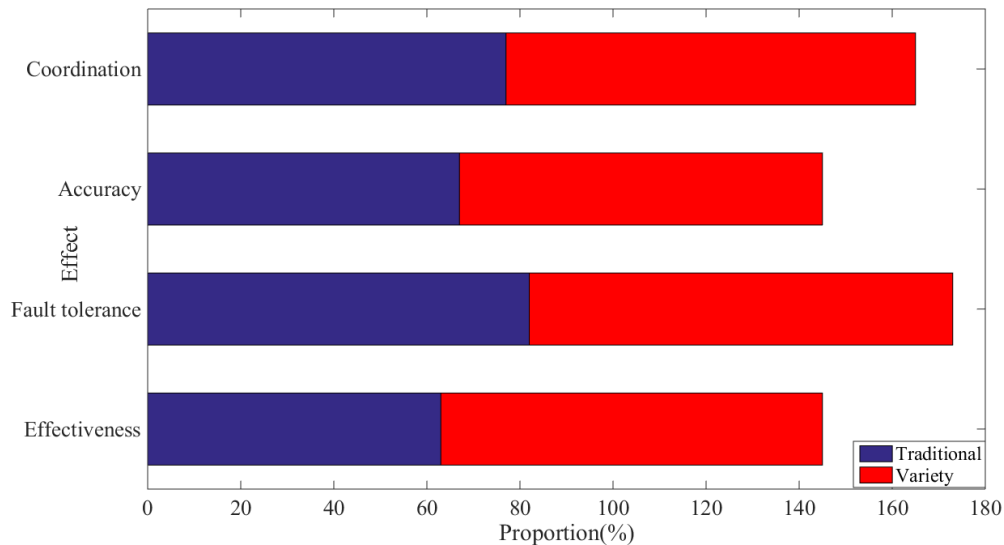

Figure 2. Comparison of the effect of data reporting on the home page of medical records under different technologies

From the data changes in the figure, it can be seen that the performance of the Web-based data reporting system has been significantly improved. Among them, the efficiency of data reporting has increased by 19% compared with the traditional one, and the fault tolerance rate of data reporting has increased by 15%. In addition, the accuracy and coordination of data reporting have increased by 11%.

5. Conclusions

The Web-based data reporting system is to serve hospital patients and provide users with a platform for rapid and accurate information processing. With the continuous expansion of the scale of various departments and the continuous increase of the number of users, more users will participate in the use of the system, so more functional requirements will emerge, and the system needs to be improved in the direction development of. This is to be done in the future maintenance process of the data reporting system to expand other functions related to the system to meet more needs of users.

Acknowledgement

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