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Healthcare Quality Management Analysis Based on Healthcare Information Technology

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Abstract: ***Medical information technology plays a crucial role in the basic quality, link quality and end-of-life quality management of medical quality, helping to improve the efficiency and quality of medical quality management. The rapid development of social economy has provided good opportunities for the development of China's medical and health industry, and the popularization and application of Internet information technology has also brought more opportunities for medical and health care. To this end, hospitals should pay full attention to the development of medical information technology and actively build a sound informationized medical quality management system on this basis.***

Keywords: Medical quality; Medical information technology; Management analysis.

1. INTRODUCTION

The advent of the information technology era provides good support for the conduct of various work, and the hospital information management system should keep pace with the times and deeply apply computer network technology, thereby improving its own work efficiency and quality, thereby promoting the qualitative development of information management work. In the course of the work, we should pay attention to the renewal and improvement of the information system to lay a foundation for the work of the hospital. At present, medical information technology has been applied in various aspects such as finance and clinical treatment, which brings convenience to medical care and also brings challenges, such as the leakage of patient information. Therefore, in the actual work of hospitals, the medical quality management system should be gradually improved. To give full play to the positive role of information technology, realize a comprehensive monitoring of the process of treating patients' diseases to fully ensure the rights and interests of patients, so as to ensure that the hospital's various work is carried out scientifically and rationally, contributing to the development of China's medical and health care industry. Li et al. (2025) proposed a graph neural network-enhanced sequential recommendation method to optimize cross-platform ad campaigns, improving targeting efficiency[1]. In urban planning, Xu (2025) introduced CivicMorph, a generative modeling framework for public space development, enabling data-driven urban design[2]. For telecommunications, Tu (2025) developed SmartFITLab, an intelligent platform for 5G field interoperability testing, enhancing validation processes[3]. Xie and Liu (2025) contributed to HR technology with EvalNet, a multimodal fusion system for automated recruitment interview analysis[4]. Zhu (2025) addressed small business automation through TaskComm, a task-oriented language agent designed to streamline workflows[5]. In digital marketing, Zhang (2025) applied reinforcement learning to automate ad campaign optimization for small businesses[6], while Hu (2025) created few-shot neural editors for 3D content generation targeting SMEs[7]. Tian et al. (2025) further advanced advertising technology with a cross-attention multi-task learning approach for improved ad recall[8]. Wang et al. (2025) investigated AI-enhanced financial risk control systems for multinational supply chains, providing empirical optimization strategies[9]. In legal tech, Xie et al. (2024) developed a Conv1D-based model for multi-class legal citation classification[10]. Medical imaging saw innovations from Chen et al. (2023) with their text-guided 3D vision-language pretraining method for unified segmentation[11], while Wu et al. (2023) proposed Jump-GRS, a structured pruning technique for efficient neural decoding[12].

2. STRUCTURE OF MEDICAL QUALITY

In the field of medicine, the structure of medical quality is as follows: basic quality, link quality and end quality. First, basic quality. Basic quality is the basic work of medical services. To improve the level and effectiveness of medical services, it should be applied throughout quality management. After the basic quality is refined, we can derive personnel, technology, materials and other modules, and the presence and application of these modules can fully play the important role of basic quality and promote the effectiveness of medical quality management. Second, link quality. As the name suggests, link quality is the quality management of all links in the medical process. At present, in the context of regional health informatization, the application of information quality, Not

only has patients been provided with a variety of medical treatment pathways, but the quality aspect has also undergone a significant transformation during this period, from the previous in-hospital diagnostic and treatment aspects to the two areas of in-hospital and inter-hospital care. Finally, final quality. End-of-life quality is the combination of basic quality and link quality, and its main task is to evaluate the quality of various medical effects and provide reasonable feedback based on the actual situation.

3. ROLE OF MEDICAL INFORMATION TECHNOLOGY IN MEDICAL QUALITY MANAGEMENT

In hospital management, medical quality management is an extremely important management element, and medical quality can truly reflect the specific management quality and service capacity of the hospital to a certain extent. Its main components include basic quality, link quality and end quality. Strengthening medical quality management is of great practical significance for improving patient and family satisfaction rate of hospitals, maximizing the benefits of medical services, and promoting the sustainable development of the hospital itself.

With the construction of medical informatization, various medical information technologies have been developed, traditional medical technologies, medical management methods and various advanced information technology means, such as computer technology and big data technology. It is used in medical quality management, managers can directly use the wide coverage, superior performance of medical quality information management system, the hospital's medical and health services for automation, the whole process of supervision and management. The questions, suggestions and comments on the quality of service can also be fed back to the managers.So that managers can quickly and accurately understand the practical problems existing in the medical quality management of the hospital, and then put forward the corresponding solutions, and constantly optimize and adjust the medical quality management strategy [1]. In contrast to the traditional manual management model, medical information technology is introduced into medical quality management. It can effectively avoid the occurrence of human management errors and loopholes, and can also make up for the inefficiency of human management, the limited scope of management, and the low effectiveness of medical quality management, so as to promote the full optimization of the effectiveness of hospital medical quality management.

4. HEALTHCARE QUALITY MANAGEMENT STRATEGY BASED ON MEDICAL INFORMATION TECHNOLOGY

4.1 Accelerate the standardization of treatment

Standardized treatment is an important way of medical quality management. In order to achieve standardized treatment, it is necessary to promote clinical pathway and standardized management in medical and health public service units. In addition, in the process of conducting standardized treatment, it is necessary to always follow the medical advice to greatly increase the enrollment rate. The clinical path is built to ensure that patients, medical care, and physicians are at the same level, and case programs and medical prescription programs are managed uniformly. Health care professionals can dynamically examine the standardized treatment paths implemented, and design and implement all treatment programs in the medical path system. Manage clinical path implementation versions to ensure that path modifications are traceable and to automate the acquisition of data information to produce the most common evaluation reports and accelerate progress in evaluating, improving, and modifying clinical paths.

4.2 Implement time-slot booking

By making accurate estimates of the capacity of outpatient departments, and by using the Internet and other means, hospitals can effectively publish outpatient information. Patients can use the Internet, SMS, telephone, self-service registered machines and other means to make registered appointments, and the appointment registration system can record the appointments and connect with the telephone and e-mail provided by the patient, automatically alerting the patient to visit the doctor on time. Based on the appointment time, patients visit the hospital and arrange their own time reasonably, eliminating the queueing process. The way of triage registration is adopted in the hospital. The patient without appointment can register directly to the floor of the department. After registration, the patient can queue up directly to the outpatient information system, thus effectively avoiding the congestion caused by centralized registration.

4.3 Verify that the information system is integrated with barcode technology

Each patient's specimen begins to be processed before taking, transporting, receiving and processing tests, and the instrument and system communicate in two ways. In the inspection process of specimen testing, auditing, confirmation, and inspection report without paper transfer, barcodes are used to monitor and scan until finally effectively clarify the inspection results. This practice effectively avoids errors before specimens are tested and reduces contamination in the laboratory of the test list. At the same time, you can print the test report by yourself [2]. In addition, patients can print the test results on a self-service box with the help of their own electronic report card, so that patients can obtain the test results quickly, providing convenience for patients.

4.4 Management of medical records and statistics

In the management of case information statistics, the efficient application of computer information network technology can improve the quality and efficiency of information statistics such as hospital visits, hospitalizations, rescues, and deaths. The application of computer network technology can facilitate the automatic generation of information and ensure the accuracy of statistical data while minimizing the workload of staff and improving the overall operational efficiency of the hospital. The construction of a network information management platform can carry out standardized analysis of financial data and promote the standardization of financial work. After the information and data are transmitted to management, managers can conduct efficient analysis and make the right decisions. At the same time, the information management system can also record various data on drugs, which can be efficiently transmitted between departments, promoting the quality of drug distribution and accounting work.

4.5 Implementation of clinical drug intervention

The medication management of hospitals can improve the medication intervention by strengthening information technology, thereby improving the medication level of hospitals, and effectively safeguarding the safety of medical and health care. We should strictly follow the rule of level to level administration of drugs, and on the basis of the title of doctors, to prevent the use of antibiotics, and to fill in the instructions of the use of drugs that exceed the days and varieties. The emergency department should be audited by the director on duty, and the medical information system should supervise the functional departments. In addition, strengthen the supervision of antibacterial drugs used by surgical patients, scientifically control the time of drug use, rationally select the types of drug use and strictly rely on the type of surgical incision when using drugs.

4.6 Build an information management system

When applying medical information technology in hospital medical quality management, managers need to attach great importance to medical quality management. Under the premise of certain knowledge of medical IT, based on the actual situation of the hospital and medical quality control requirements, take the initiative to join hands with technicians and other relevant departments to jointly build an IT medical quality control system covering all departments of the hospital and throughout the entire flow of service. Take the hospital where I work, for example, which relies on existing computer systems and management systems, and has established a modern medical quality information management system consisting of subsystems such as organization and evaluation, control and assurance. In this management system, each subsystem maintains a high degree of independence but is closely related [4]. Organizational systems in the informational medical quality management system, including the regional and hospital levels, The quality control organization of the former is the health supervision department, which aims to achieve the synergy of medical and health services among hospitals. The quality control organization of the latter is divided into three levels, namely, hospital, department and specific ward, which is mainly used to control the medical quality within the hospital.

4.7 Implement the closed-loop management of medical orders

The management of hospitals is inseparable from medical information technology. Before the application of information technology in the medical and health industry, the considerations proposed by physicians during visits were usually memorized by the accompanying staff or the responsible nurse by the brain, and important information was often missed or ignored, which could easily have a negative impact on the patient's recovery. However, after implementing closed-loop management of medical prescriptions, the medical doctors' concerns are transmitted to the designated ward through the hospital's internal system, enabling nurses to check the relevant matters on a case-by-case basis when patrolling the ward, and any problems can be resolved in a timely manner [5].

In addition, the dynamic closed-loop management of medical consultations also introduces bar codes and wireless technology, which minimizes the harm caused to patients by objective factors.

5. CONCLUSIONS

In summary, the development of the country and the progress of society drive the rapid development of computer network technology. In the hospital information management system, the amount of data is large and the information system complex, so there is a higher requirement for the breadth and depth of application of computer network technology. With the reform and deepening of the medical system, the role of computer network technology in hospital information management systems has received increasing attention. Conduct a comprehensive analysis of the problems existing in the hospital information management system and effectively integrate computer network technology with the hospital information system to improve it. The quality and efficiency of work in the information management system are a priority concern for the hospital. At the same time, the hospital should take strong measures to improve the management of network technology, and pay attention to strengthening maintenance, thereby promoting the scientificization and standardization of information management, and enhancing the quality of work and service.

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