

# *Medical Institution Security Risk Management*

**Sineme Alturjmana and Chiadia Altrjemana**

*American University in the Emirates, UAE*

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**Abstract:** In recent years, the demand for medical services in China has continued to increase. However, doctor-patient disputes and doctor-patient contradictions have not been effectively controlled and improved, and incidents of attacking and injuring a doctor have occurred from time to time. Frequent medical safety problems, while affecting the normal order of medical institutions, have also seriously damaged the physical and mental health of medical staff and patients, and damaged the hospital's brand and reputation. This article mainly studies how to systematically carry out research and innovation of medical security risk management and control the occurrence of medical security (adverse) events. This article analyzes medical risk management from two aspects: total quality management and risk prevention and control management; analyzes the current status and problems of risk prevention and control from three aspects: government supervision, corporate self-control, and medical institution management; from the establishment of a quality control center and the establishment of a medical equipment administrator. In other aspects, explore and practice medical risk prevention and control methods to reduce medical security risks. The survey results in this article found that there is a misuse of clinical users. Due to poor clinical maintenance management, improper use or misuse, it accounts for 50% to 60% of the risk sources of adverse events in medical devices. There are many types of hospital equipment and complicated operations. Insufficient training, inadequate knowledge of standardized operating procedures and inadequate implementation have led to misuse.

## **1. Introduction**

In recent years, China's medical and health undertakings have developed rapidly. According to data from the National Health and Family Planning Commission, as of the end of November 2017, the number of medical and health institutions in China reached 993,000, of which 30 thousand were hospitals [1]. Compared with the end of November 2016, the number of medical and health institutions nationwide increased by 1,632, the number of hospitals increased by 1,543, public hospitals decreased by 566, and private hospitals increased by 2,109 [2-4]. The number of private hospitals has increased year by year, and the competition in the medical market has become

increasingly fierce. Some irresponsible media have deliberately distorted the facts of medical disputes for eyeballs, lacking a fair evaluation of medical issues, and some hospitals lack experience in coping with them. Being hosted by negative propaganda. The society is full of false medical advertisements. At the same time that patients' subjective "judgment ability" has increased, they lack proper medical expertise, doctor-patient communication difficulties have increased, patient compliance has deteriorated, and medical satisfaction has decreased [5-7]. At the same time, some patients still had malignant medical treatment, the purpose of which was only for huge compensation [8]. In addition, with the development of medical science, the application of new technologies brings medical convenience and the possibility of cure, but also because of the uncertainty of some new technologies, it brings great risks, which affects medical safety. Effectively improving hospital medical safety has become a great challenge for hospitals [9-11]. Medical safety (MS) is the core of medical management and runs through the entire medical service process [12]. Due to the professionalism, complexity, high risk of medical services, and uncertainty of diagnosis and treatment results, medical safety (adverse) events will basically follow [13]. Therefore, medical security can be said to be a medical service provider's actions to prevent medical security (adverse) events and their adverse consequences through certain methods. It also refers to patients and medical work during the process of providing corresponding medical services by medical institutions. Personnel are not harmed by any accident [14-15]. Medical safety is directly related to the lives and health of patients and medical staff. It is a core indicator for evaluating the overall level of a hospital, and it affects the hospital's credibility and comprehensive benefits. The key to ensuring medical safety is to improve the quality of hospital care [16-17].

Therefore, under the deepening of the reform of the medical and health system, and on the basis of maintaining the publicity of public hospitals, a scientific, complete, and meticulous and efficient medical safety management system is established to continuously improve the medical service process, improve the hospital management system, improve medical service capabilities, and reduce medical treatment [18-19]. Security risks, in order to provide better medical security, meet the high standards of the public for medical services, and ensure the sustainable, stable, and healthy development of hospital safety work have become the focus of public hospitals.

John believes that enterprise security risk management (ESRM) is a new concept and new method of managing security procedures by using traditional risk principles. As a concept and life cycle, ESRM is committed to establishing a relationship between security practitioners and business leaders. Business partnerships to more effectively provide protection against security risks based on acceptable risk tolerance as defined by business asset owners and stakeholders. He explored the foundation of the ESRM philosophy and life cycle, and also showed how adopting the ESRM philosophy and implementing a risk-based security management model in an organization can improve the organizational resilience expected by organizational leaders, executives, and business representatives [20]. B believes that mobile gadgets and tools are now pervasive in healthcare and informatics, and that some medical tools are also portable. With the incremental use of wireless devices, these are effectively used to generate ad hoc networks. In order to generate the network, gadgets cooperate with each other, which sometimes leads to a reduction in security. The current work focuses on certain mechanisms to increase the rate of information transfer. Including Pathraters based on malicious node recognition technology, at the same time not only evaluate trust based on the maliciousness of the system, but also evaluate trust based on the functions and capabilities of gadgets [21]. Tang has designed a radiotherapy quality assurance program to improve quality, efficiency, and consistency across more and more campuses in large institutions. He established a quality assurance committee with at least one physicist representing each of our six campuses (22 linear accelerators). A weekly meeting is planned to make recommendations and update current procedures, review end-to-end and other test results, and prepare comprehensive

reports for internal and external audits. The QA procedures for the treatment and imaging equipment are derived from TG reports 142 and 66, practice guidelines, and feedback from ACR evaluations. The committee works to reach consensus on a single quality assurance program across all campuses using the same type of equipment and reference data. Since the tolerance recommendations for the reference baseline data may be explained in some cases, the committee reviewed the characteristics of all machines and quantified all differences before selecting a treatment planning system (i.e., the treatment planning system commissioning data representing all machines) . Or machine-specific values (that is, commissioning data for a single machine) as baseline data. His results are as follows: All campuses will strictly follow the configured QA procedures. A list of available equipment has been compiled and other equipment procurements have been carried out with quality inspection procedures as required. Dose characteristics of all machines were evaluated using the same method to ensure consistency of beam data where possible [22]. In most cases, the baseline data refers to the commissioning data for the treatment planning system, but machine-specific values are used as a reference in specific cases. Conclusion: Using a uniform quality inspection program can minimize the differences in quality inspection procedures. With a centralized database, data collection and analysis can be simplified. This plan will help to unify the treatment of patients and the analysis of a large number of QA data across the school, which will eventually promote FMEA [23]. He used the propensity score matching method from County A (intervention group) and County B (control group), and selected 1,673 pairs of hypertension patients. The maximum annual reimbursement limit for intervention clinics has been increased from 300 yen to 600 yen, and the daily limit has been increased from 10/12 yen to 150 yen. The scope of compensation and institutions has also expanded from January 2016. His Outcome Measures Difference Model is used to estimate the impact on the choice of medical service type. He examined the effects of length of stay and blood pressure on health outcomes. Results Intervention increased the total number of visits by 3.225 times ( $p=0.001$ ). The number of outpatient visits increased by 3.3 times ( $p=0.008$ ), while the number of outpatient visits in townships increased by up to 1.932 times ( $p = 0.001$ ). Inpatient visits decreased by 0.075 times ( $p=0.000$ ), while county-level inpatient visits decreased by a maximum of 0.042 times ( $p = 0.033$ ). At the same time, the largest proportion of township levels among outpatients increased by 14.8% ( $p=0.000$ ), and the highest proportion among inpatients increased by 13.3% ( $p=0.048$ ). The number of outpatients at the county level decreased by 13.2% ( $p=0.000$ ), while the number of inpatient treatments decreased by 7.7% ( $p = 0.040$ ). Compared with the control group, the length of hospital stay and blood pressure were reduced. Conclusion Improving outpatient welfare packages can reduce the patient's dependence on inpatient services by motivating outpatient services, consolidate the primary position of township hospitals, and guide patients to return to primary medical institutions. The future health insurance reform should be “looking at the long-term”, and more attention should be paid to the rationality of medical service utilization [24].

The main research work of this article is: (1) Based on the collection of relevant domestic and foreign system management and medical, aerospace, and corporate security management related literature and works, combined with the investigation and research in the hospital logistics system internship process, the medical security management at home and abroad A comprehensive analysis of the status quo; medical safety and its scope are defined; the basic characteristics and causes of medical safety are summarized; the influencing factors of medical system safety are analyzed from the four aspects of management, personnel, equipment and environment; and evaluation indicators for medical safety management The establishment of the system laid the foundation. (2) Based on the research on safety assessment methods, contents and procedures, this article systematically expounds the characteristics of management negligence and danger tree (MORT), its use methods, and the steps of fuzzy comprehensive evaluation to determine medical safety. Specific methods and

processes for the evaluation of the management system. (3) Based on the theoretical research and field investigation of the medical safety management system, this article combines the actual situation of the safety management of the hospital's medical system, and establishes the elements and components of the medical safety management evaluation system through Delphi expert survey method and comprehensive analytic method. Weight; using the MORT method, from the perspective of management, a safety evaluation system model for the medical safety management system is constructed; with the comprehensive evaluation method in fuzzy mathematics, the comprehensive evaluation of the safety management level of the hospital medical system is performed.

## 2. Proposed Method

### 2.1. Medical Safety-Related Concepts and Theoretical Foundations

#### (1) Medical safety

Medical security is the core of medical management and exists in the entire process of medical services. Different experts and scholars have different definitions of medical security, but on the whole, they can be divided into medical security in a narrow sense and medical security in a broad sense. In the narrow sense, medical safety is basically equivalent to medical quality safety. It means that medical and health institutions use certain methods to prevent the occurrence of medical safety (adverse) events and their adverse consequences, and to protect patients and medical staff during the medical service. Suffered any accidental injury. In a broad sense, medical security also includes factors such as the environment, fire protection, equipment, and information systems that can cause accidental injury to patients and medical staff.

#### (2) Medical safety (adverse) events

Medical safety (adverse) event is the most direct indicator of medical safety. It refers to any possible harm to patients during medical services, which may lead to doctor-patient disputes, affect the normal medical order and endanger the personal safety and health of medical staff. Factors and events of legal rights. Refer to the Chinese Hospital Association's grading standards for medical safety (adverse) events and classify the medical safety (adverse) events accordingly. The grading standards are as follows: Grade I warning events: unexpected events of death, serious bodily injury or psychological injury; Grade II adverse event: Patient's body and functional damage caused by the diagnosis and treatment activities rather than the disease itself during the diagnosis and treatment of the disease; Grade III no consequence event: Although adverse facts occurred, it did not cause any damage to the patient's body and function or Incidents with minor consequences that can be fully recovered without any treatment; Class IV near error events (hidden events): Events that did not form adverse facts due to timely detection of errors.

#### (3) System theory

An organic whole with certain elements and functions composed of certain elements through a certain form is called a system. System theory is a discipline with logical and mathematical properties. It considers that the elements in the system are interacting and interrelated, and they work together instead of individually on the whole. System theory treats the research object as a whole, analyzes the structure and function, and takes corresponding measures to improve it to achieve the purpose of optimizing the system. The top three hospitals generally have the characteristics of obvious openness, large number of patients, high mobility, and unavailable medical services. From the characteristics of the hospital, the system theory and the hospital's medical safety management have an internal unity. The realization of the medical safety goal lies in whether the functions of the hospital's systems can be brought into full play, and the external environment of the hospital will affect the functions of the hospital's various systems. System

theory requires that hospital security be considered as a whole, then its subsystems should include support for medical security and non-medical security, and non-medical security can be further divided into subsystems such as organization management, logistics support, and information systems. There is a mutual influence between them, and if one of them has a problem, it will have an impact on the other, thereby affecting medical safety. Only when each subsystem of the hospital is operating normally, the entire system can guarantee the integrity, thereby ensuring medical safety.

#### (4) Public service theory

The new public service theory is the fourth stage of the development of public service theory, which believes that it is necessary to provide corresponding public services centered on citizens. China started the new medical reform in 2009, and issued the "Notice on the Pilot Work Arrangement for the Reform of Public Hospitals", "Opinions of the Central Committee of the Communist Party of China on Deepening the Reform of the Medical and Health System", and the "Work Arrangement for the Pilot Work on the Reform of Public Hospitals in 2011". The service values pursue the same values. The document states that hospitals provide medical services directly to patients, are the main body of China's medical service system, and play an important role in medical services. The core of the reform of public hospitals is to solve the concerns of the people, emphasize the public welfare nature of the hospital, reduce the burden of medical treatment for the masses, and make the medical and health system more suitable for the people's growing medical needs. The excessive marketization of public hospitals should be abandoned, and the hospitals should return to the nature of public welfare and become a medical institution that serves Chinese citizens.

#### (5) Multiple governance theory

Before the 1990s, the government was regarded as the sole legal subject of public service and product management, and then began to propose the concept of "less governance, more governance", and was recognized by most management scholars. The theory of multiple governance began. Become a research hotspot. The theory of multiple governance is manifested by the diversity of governance subjects, management methods and interaction modes. The essence is that the government is no longer the only provider of public goods and services, but is more a system guarantee; apart from the relationship between management and management, the government and citizens are also services and being served, and being monitored and The relationship of supervision; from unilateral emphasis on government responsibility in social management to emphasis on the joint responsibility of government, market and society.

The current state of medical security in China is insufficient government financial investment, medical security-related laws need to be improved, the social medical environment is poor, hospital safety management is inadequate, some medical personnel need to improve their safety awareness, and patients have poor trust in doctors. To rebuild a good medical security environment, the government should play a leading role in the development of health care. Hospitals, medical staff, and patients have a direct role, and society, the media, and other third parties should play a coordinated role in promoting the unavailable. The theory of multiple governance believes that each subject may become the center of power, and the scope of its role changes with the change of specific things. Therefore, in building a good medical security environment, each subject should effectively communicate, understand and understand each other, and emphasize patient participation. Medical safety management, to solve problems with a positive attitude, and form a reasonable and equal interactive platform and responsibility mechanism.

As a dynamic open system, there are many factors affecting the security of the medical service system, and they are intricate and complex, including those inherently and artificially added, as well as internally derived and externally invaded. Starting from the most basic elements of system

analysis and starting from the most fundamental cause of the accident, the influencing factors can be classified into four basic factors: management, human, machine (equipment), and environmental factors. The "person" in the system refers to the person who is the subject of the work, including: medical staff, nursing staff, patients and their families; "machine" refers to the general name of all objects controlled by people in the medical environment, including medical devices, Medical consumables, medicines, etc .; "Environment" refers to the working conditions for medical behavior, including medical environment and social environment. The relationship between various influencing factors is shown in Figure 1:

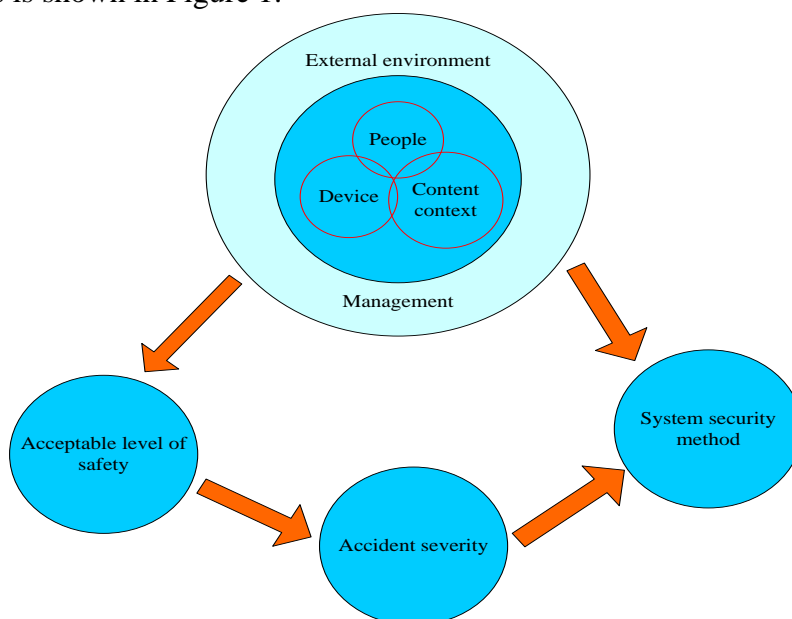


Figure 1. Interrelationships between various factors affecting the security of medical services

When conducting a security analysis of the medical service system, it is necessary to make clear that security is a common activity involving all employees, consideration of all elements, and control of the entire process. Management must be used as a control and coordination means to comprehensively regulate the interaction between people, machines, and the environment. Relationship, and through the role of information feedback, comprehensively improve safety management methods, and ultimately get a more secure medical service system.

## 2.2. Types of Medical Risks

In order to facilitate research in theory, it is convenient to adopt different risk management measures to deal with different types of risks in management practice. It needs to be classified as follows according to the common points and distinguishing characteristics of the actual medical risks:

### (1) Divided by basic nature

It can be divided into medical accident risk and medical accident risk, and the medical accident risk includes the risks of medical errors, adverse reactions and complications. The risk of a medical accident is a preventable risk caused by the medical staff's failure to implement the diagnosis and treatment standards while working. The risk of a medical accident is generally not caused by the outdated medical staff and it is difficult to prevent.

### (2) Divided by the source of the risk

Different departments of the hospital, such as internal medicine, surgery, obstetrics and

gynecology, and infectious diseases, have different characteristics of their medical risks due to their different medical activities. Therefore, in order to manage the risks of different departments in a targeted manner, hospitals need to classify the risks according to their sources.

(3) According to the responsibility

It is divided into permissible risk and non-permissible risk according to whether it bears responsibility. According to the severity of liability, it can be divided into medical technology risk and medical liability risk. It is divided into medical system risks and doctors' professional risks according to the different subjects who bear responsibility.

(4) According to the preventable degree when managing risks

According to the hospital's degree of prevention of risks from weak to strong, it can be divided into unpreventable risks, general preventable risks, and preventable risks. Regarding unpreventable risks, since this is often not caused by individuals, and individuals cannot completely prevent these factors from occurring, the hospital is not responsible for the consequences of such risks, but it is still necessary to take basic measures to mitigate them. The damage it brings. Although general preventable risks cannot be completely prevented, some measures can be taken to achieve the desired effect of prevention. For preventable risks, the entire hospital needs to strengthen the awareness of risk prevention, and each step in the medical work must comply with the diagnosis and treatment specifications, so that the risk incidence can be greatly reduced.

### 2.3. Causes of Medical Risk

The cumulative nature and complexity of medical risks determine that medical risks are the result of a combination of factors. Among them, the causes of medical risks can be roughly divided into direct causes, such as medical factors, patient factors, and doctor-patient communication factors; and indirect causes, such as social factors and medical science development factors.

(1) Medical factors

Medical factors mainly involve two aspects: hospital management and medical staff. Hospital management-The level of hospital management greatly affects the number and frequency of medical risks. A high level of hospital risk management will promote the establishment of a medical risk early-warning and pre-control system, and it will also improve the above system and appropriately handle the occurrence of risks when medical risks occur. Conversely, if the level of hospital medical risk management is low, Will lead to frequent medical risk events. The professional level and ethical cultivation of medical staff are also one of the causes of medical risk. Among them, the level of medical staff's diagnosis and treatment is one of the most direct and important factors affecting medical risk. Improving their professional knowledge is important to reduce medical risk events One of the measures. In addition, the education of medical students in China now attaches more importance to the education of their medical knowledge, while ignoring or neglecting the cultivation of their humanities, which leads to their lack of necessary legal awareness in clinical work and cannot be well protected. Yourself.

(2) Affected factors

The affected factor refers to the occurrence of risk events caused by the patient's own problems during the occurrence of medical risk events. For example: the patient lacks understanding of the specifics of medical knowledge and medical science; the prognosis of the disease is too high; the individual patient's differences in response to diagnosis and treatment are different.

(3) Factors in doctor-patient communication

Due to the asymmetric characteristics and emotionally intensive nature of medical service information, the communication between doctors and patients is extremely important in the medical process. If medical staff can communicate with patients in proper language and in proper way when

treating patients, this will promote the patient's understanding of their own condition and reduce the occurrence of doctor-patient disputes. However, in the specific work, the medical staff was unable to communicate with patients due to their busy work, which led to an increase in the number of medical disputes.

#### (4) Social factors

In recent years, the influence of social factors on medical risk events has become increasingly significant. Among them, mainly include the social responsibility pressure of the medical industry and the accumulation of negative reports by the social media on the medical industry. China's health undertakings are "public welfare undertakings in which the government implements certain welfare policies." The medical industry is also the same. As a special service industry, it has the sacred mission of saving lives and helping the wounded. In addition, people's respect for the medical industry in history has increased the social responsibility of the medical industry. However, with the development of China's legalization process and the increase of patients' awareness of self-protection, the incidence of medical disputes has increased significantly in recent years. In addition, some news media, for their own interests, over-hyped these medical disputes, and even misreported them. As a result, the negative impressions on the medical industry from all walks of life gradually accumulated, and eventually caused medical risk events.

#### (5) Development factors of medical science

The application of high-tech science and technology in the medical field and the unavoidable limitations in medical science jointly increase the medical risk coefficient. High-tech science and technology need a certain amount of time to study and experiment in order to give full play to its effectiveness, otherwise it will increase the uncertainty and risk of the medical industry. The development of medicine is lagging behind the mutation of the disease, and the current level of development of medicine does not have the conditions for treatment of some diseases, and there are still many areas that have not been touched.

### 3. Experiments

#### 3.1. Experimental Design

Questionnaire methods and survey objects. Based on the 54 indicators of the patient safety risk factor summary table as the basis for screening, provide advice through the professional literacy of hospital managers, medical experts, academics, government officials and patient representatives (expert patients), and representatives of social groups to screen important patient safety Risk factor indicators.

A total of 40 questionnaires were distributed at this stage, and a total of 30 valid questionnaires were recovered. The effective rate of the questionnaire was 75%. The survey objects include the following five types of personnel: (1) Hospital management: the hospital's chief and deputy directors, department chiefs and section chiefs, or department business staff responsible for patient safety. (2) Medical and health management department: the director or director of the central or local health authority (including medicine, medicine, health care, etc.). (3) Scholars: Associate professors or above in the fields of medicine, medical management, and public health in universities and colleges in China. (4) Patients and their families: expert patients and their families, that is, senior medical, pharmaceutical, and nursing staff who are themselves patients and their families; general patients and their families. (5) Senior (over 5 years) medical journalist.

#### 3.2. Data Acquisition

Method of screening pointers-fuzzy Delphi method. Because the Delphi method has the



disadvantages of long time-consuming, high cost, low recovery rate and may distort the original intention of the experts, this study uses the fuzzy Delphi method to make up for the shortcomings of the improved Delphi method, and establishes various constituent factors and their associated risks Factor assessment guidelines, selection and screening of patient safety factor guidelines. The basic steps are as follows:

Step 1: Establish a fuzzy trigonometric function. In this study, the collected expert evaluation values are based on equations (1) to (4) to establish a triangular fuzzy function for each influencing factor.

$$\bar{N} = (l_A, m_A, u_A) \tag{1}$$

$$l_A = \min(X_{Ai}) \quad i = 1, 2, \dots, n \tag{2}$$

$$m^A = (X_{A1} \times X_{A2} \times \dots \times X_{An})^{1/n} \tag{3}$$

$$u^A = \max(X_{Ai}) \quad i = 1, 2, \dots, n \tag{4}$$

Among them,  $X_{Ai}$  is the i-th surveyor's evaluation of the influencing factors of A;  $l_A$  is the smallest possible value of the surveyors' evaluation of the influencing factors of A;  $m_A$  is the geometric mean of the surveyors' evaluation of the influencing factors of A; The maximum possible value of the impact factor evaluation value; A is the impact factor; i is the investigator;  $\tilde{N}$  is the fuzzy number of index importance.

The second step: screening evaluation criteria: when  $m_A \geq S$ , accepts the A influencing factor as the evaluation criterion, when  $m_A < S$ , deletes the A influencing factor (the consensus of the decision group on the A influencing factor, S is the threshold value), the main point is the choice of the decision threshold value, Including the constituent element screening threshold and the index screening threshold.

## 4. Discussion

### 4.1. Analysis and Discussion on Security Risk Management of Medical Institutions

#### (1) Analysis of the organization's management capabilities

Table 1. Triangular fuzzy functions of security risk factors

Constitutive factor	Minimum value	Max	Geometric mean
Patient involvement	4	10	7.21
Unsafe human operation	5	10	8.34
Precursor of unsafe behavior	6	10	8.03
Supervision and management of unsafe behavior	6	10	8.11
Organizational influence	3	10	7.42

As shown in Table 1, the geometric mean of the triangular fuzzy functions of the five constituent factors are all higher than the decision threshold of 7, so all five constituent factors are retained. When considering the thresholds of various constituent factors, the purpose of this study is to select the risk factors that affect patient safety as much as possible. If the threshold is set too high, some important risk factors will be ignored. We consider that if the arithmetic average of the index values of the questionnaires received is 7.11 as the threshold value, 25 indicators will be deleted (the deletion rate of the indicators reaches 51%). 11 items (the deletion rate of the index reaches 22.4%).

If the arithmetic mean is  $7.11 \times 0.9 = 6.40$ , 5 items will be deleted (the deletion rate of the index reaches 10.2%). Therefore, after consulting with experts and professors, the threshold value was determined to be 6.74 in order to obtain an appropriate number of complete patient safety risk factor items.

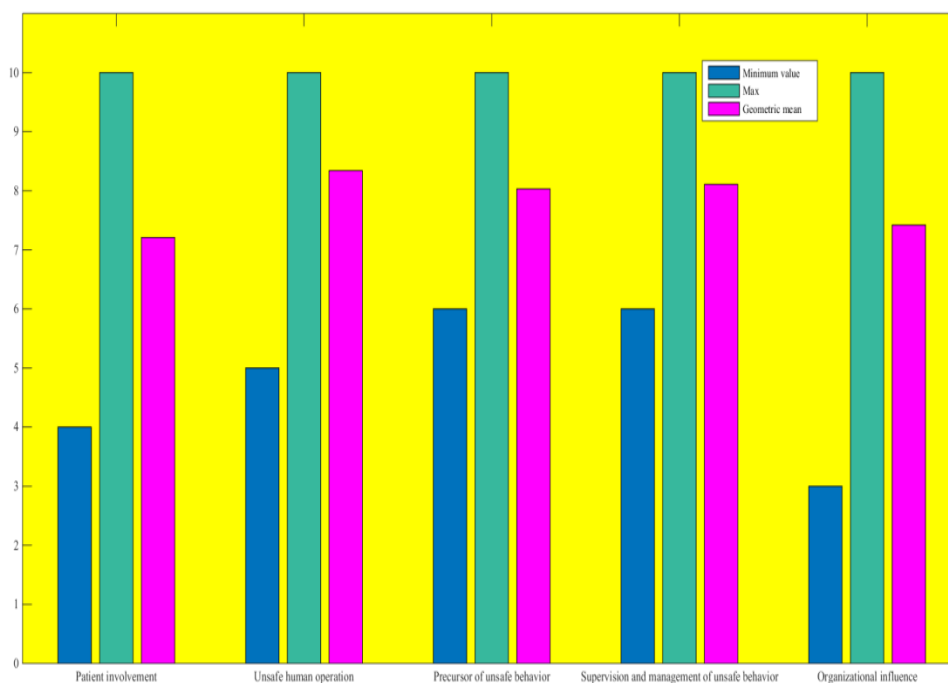


Figure 2. Map of security risk factors

As shown in Figure 2, doing medical quality and safety work is not an easy task. It requires the cooperation of internal and external environments, the joint participation of all medical risk managers, and high-level, middle-level and grass-roots leaders for medical quality and safety. Management commitments. The internal environment mainly depends on the cooperation of the medical department, nursing department, clinical department directors, and business backbones at all levels. The external environment mainly depends on the regulation and supervision of health and family planning administrations, medical associations and health organizations. However, the core of medical quality and safety is to rely on the commitments made by senior, middle and grass-roots leaders for medical quality and safety management, especially whether senior medical institutions are really working to improve medical quality and safety and reduce medical risks for hospitals. With the management ability of the leading organization determines the final medical quality and safety of the hospital.

(2) Analysis of medical quality and safety management in the process of medical services

Table 2. Category composition of medical safety (adverse) events

Adverse event categories	Number of cases	Composition ratio(%)
Adverse drug events	660	46.0%
Nursing Adverse Events	488	34.0%
Adverse events with blood	157	10.9%
Other adverse events	131	9.1%
Total	1436	100%

As shown in Table 2, adverse drug events, nursing adverse events, and blood adverse events were the top three, accounting for 46.0%, 34.0%, and 10.9%, and other adverse events accounted

for 9.1%.

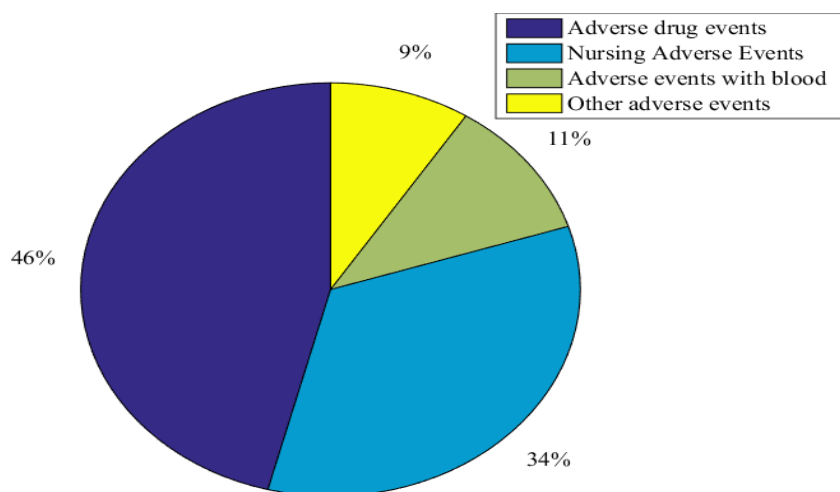


Figure 3. Composition of medical safety (adverse) events

As shown in Figure 3, medical quality and safety in the course of medical services means that medical personnel perform medical behaviors and patients receive medical services, and patients will not experience psychological, physical structure or functional damage or obstacles beyond the scope allowed by laws and regulations, Defects or death. Studies at home and abroad have found that if there is no quality management system inspection and correction mechanism in the medical service process, the medical service process is likely to cause injury or even death to patients. Therefore, the establishment of medical quality and safety management indicators of medical institutions and departments will integrate key medical links (such as surgical site infection rate, inpatient mortality, perioperative mortality, and incidence of unplanned return to the operating room) The core indicator of safety), as a key to strengthen medical management, improve medical quality and safety, and prevent medical risks, is of great significance to medical quality and safety management in the process of medical services.

(3) Liability risk analysis of fire safety objects in medical institutions

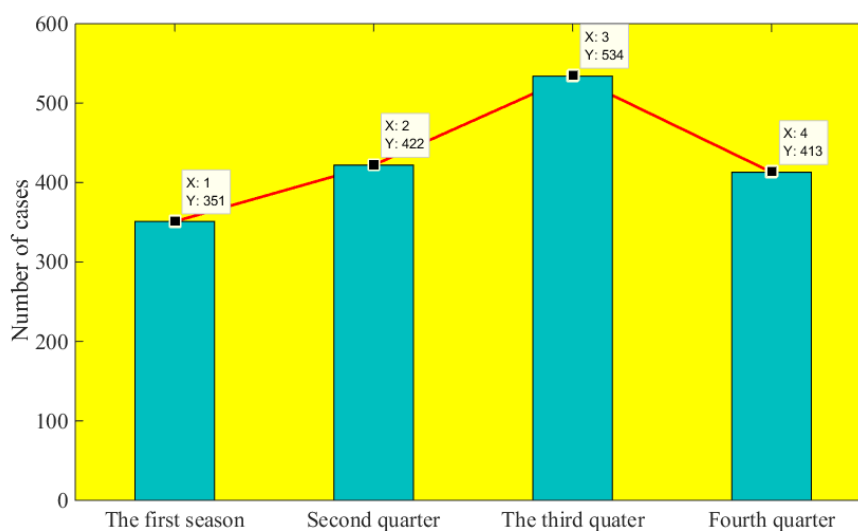


Figure 4. Quarterly distribution of medical safety (adverse) events

As shown in Figure 4, in the quarterly composition ratio, of the 16,12 medical safety (adverse) events, the largest number of medical safety (adverse) events occurred in the third quarter, which was 534 cases, accounting for 31.05%; followed by 413 cases in the fourth quarter, Accounting for 24.01%, the second quarter and the first quarter were 422 cases and 351 cases, accounting for 24.53% and 20.41% respectively. With the increase in medical needs, the use of various high-precision medical instruments and flammable and explosive reagents has continued to increase, increasing the professionalism and difficulty of safety and fire management. In daily safety management, if improper use, maintenance and storage, it is easy to cause fire accidents. With the continuous expansion of the size of medical institutions, the increase in the number of outpatients, the socialization of logistic services, the surge in staff density, and the complex structure, the more difficult it is to manage fire safety. At the same time, the lack of awareness of fire safety management and fire hazards in medical institutions and weak fire consciousness has also increased the risk of fire risks.

(4) Implementation of risk assessment

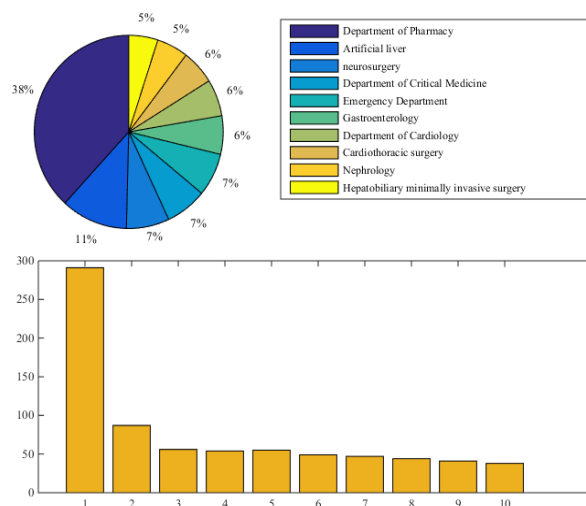


Figure 5. Distribution of medical safety (adverse) incident departments

As shown in Figure 5, medical institutions are the main users of medical devices, the main places where adverse events occur, and an important part of medical device risk management. The main problems of medical device risk prevention and control in medical institutions are: (1) Lack of awareness of risk management in hospitals, medical device risk prevention and control has shifted from pre-market approval to post-market supervision, and hospitals have inadequate management of medical devices, resulting in high medical device risks; Emphasis on maintenance and light on prevention. Most hospitals define medical equipment maintenance as the main job of the medical engineering department. They despise preventive maintenance of medical equipment, leading to increased risk costs. (2) The lack of quality control of medical equipment in hospitals, and many hospitals lack quality The testing professional equipment and professionals rely on the government to test medical devices, and they cannot detect and actively reduce the risk of medical devices in a timely manner; (3) Clinical users have misoperations. After investigation, due to poor clinical maintenance management, improper use or errors Use accounts for 50% to 60% of the risk sources

of medical device adverse events. Hospitals have a wide variety of equipment and complex operations. At the same time, medical staff lacks training in operation, lack of understanding of standardized operating procedures, and inadequate implementation have led to incorrect use.

## 5. Conclusion

Risk prevention and control of medical institutions is an important part of risk management in hospitals. The core is prevention, tedious work and difficult to bring direct benefits. "Murphy's Law" reveals that if there is a hidden danger in something, then the risk will definitely occur, and Maximize losses. Therefore, strengthen the safety risk management of medical institutions, and implement the prevention and control of medical risks in detail, so that every medical worker should pay attention to the issues. At present, some hospitals in China have established an information system to make certain management functions intelligent. Hospital information system has unparalleled advantages in statistics and analysis of medical record statistics, medical events, and so on. Therefore, it can be conceived that the function structure of the hospital's risk warning is based on the hospital's original information system. This can not only achieve sharing of some early-warning indicators, but also improve early-warning forecasting and rapid response capabilities, which can not only save a lot of manpower and material resources, but also improve accuracy. The hospital information system can realize the exchange and sharing of information, which is convenient for managers and government agencies to supervise the hospital, and makes the hospital risk early warning more targeted and feasible.

This article draws the following conclusions: Advocating a patient safety culture and effective patient safety incident system depends not only on information collection technology, but also on a good cultural environment, so that medical staff, patients and stakeholders are willing to report. Medical safety culture is an important influencing factor for the effective management of medical service safety. In the organization of each level of the country, region, and hospital, advocate and cultivate a safety culture, and establish an open, fair, responsible and beneficial cultural atmosphere. Carry out the publicity and implementation of the reporting system, carry out training lectures on the reporting system, improve the doctors and patients' awareness of this work, and gradually establish a long-term mechanism for medical security risk management.

This article recommends the establishment of seven major safety management plans for environmental facility safety, public facilities and equipment, emergency response, fire safety, public security and protection, hazardous substances, and medical equipment. The use of disaster vulnerability analysis tools (HVA) Evaluation of medical risks and specific risks such as fire prevention and hospital sense. A comprehensive emergency plan is formulated for high-risk events, and field exercises are repeatedly tested. In order to mitigate the risks caused by occupational exposure, strengthen hospital training, enhance staff awareness of standardized medical waste, and make the type, department, weight, and disposal time of medical waste classified, stored, documented, easy to track and reduce medical waste Risk of infection.

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## Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Conflict of Interest

The author states that this article has no conflict of interest.

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