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Clinical Analysis of Effective Prevention and Control of Hospital-acquired Infections in Fever Outpatient Clinics

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Abstract: *Objective:* To explore the key role of fever clinic in the prevention and control of hospital-acquired infections. *Methods:* To summarize the implementation of the infectious disease reporting process, standardized operating procedures, infection monitoring system, disinfection and isolation measures, and medical waste management system in a general hospital in Zhangjiagang City, Jiangsu Province, since the establishment of the fever outpatient clinic. Through retrospective analysis, we compared the changes in the incidence of hospital infections, patient satisfaction, and healthcare personnel satisfaction before and after the establishment of the fever clinic, and explored the important role of the fever clinic in improving the hospital infection prevention and control capacity and service quality. *Results:* Since the establishment of the fever clinic, the incidence of hospital infections has significantly decreased to 8.0%, patient satisfaction has increased to 96.0%, and healthcare personnel satisfaction has increased to 92.3%, compared with 36.0%, 72.0%, and 69.2% before the establishment of the fever clinic, and all the indexes in 2023 were significantly better than those in 2006, and the statistical analysis showed that this improvement was significant ($P < 0.05$). 0.05). *Conclusion:* By assigning professional infection control nurses to be responsible for the care of central venous catheters in ICUs, the risk of catheter-related bloodstream infections in patients can be significantly reduced. This measure is essential to ensure the smooth progress of the treatment process and improve the prognostic status of patients.

Keywords: Fever clinic; Prevention and control; Hospital-acquired infections; Effectiveness

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1. Introduction

Hospital-acquired infections, also known as hospital-acquired infections, are infections that are newly acquired while a patient is receiving inpatient care. Such infections include not only pathogens suffered directly by the patient in the hospital, but also cases in which the patient is exposed to pathogens in the hospital but develops symptoms only after being discharged from the hospital [1]. It is worth noting that the definition of hospital-

acquired infections explicitly excludes situations in which the patient is in the incubation period of the infection prior to admission or in which the infection has already begun to develop at the time of admission. The risk of hospital-acquired infections to patients' health cannot be ignored. It may not only aggravate the patient's original condition and prolong the treatment cycle, but also cause physical dysfunction and even threaten the patient's life in serious cases. Therefore, the prevention and control of hospital-acquired infections is particularly important.

The frequency of hospital-acquired infections has become an important indicator of the quality of medical care and management of medical institutions. An efficient healthcare organisation should have strict infection control measures to ensure patient safety during treatment. This includes, but is not limited to, strengthening hand hygiene management for healthcare workers, improving the cleanliness of the ward environment, rationalising the use of antibiotics, and improving the hospital infection surveillance and reporting system. In addition, healthcare organisations need to continuously improve healthcare staff's understanding of hospital-acquired infections and their ability to prevent and control them, and enhance the awareness of prevention and control among all staff through education and training. At the same time, strengthen the communication with patients and their families, popularise the knowledge of hospital infection, and jointly build a safe and secure medical environment. In conclusion, the prevention and control of hospital infection is a systematic project that requires the joint efforts of healthcare institutions, healthcare workers, patients and their families in order to reduce the incidence of hospital infections, safeguard the health of patients, and improve the quality of healthcare services.

Since the establishment of a special fever clinic in a general hospital in Zhangjiagang City, Jiangsu Province, the hospital has made significant progress in combating hospital-acquired infections and accumulated a lot of practical experience. Through a series of scientific, rigorous prevention and control measures, the hospital has successfully reduced the incidence of hospital-acquired infections to a lower level, effectively protecting the health and safety of patients. The following is a detailed report of the hospital's work and achievements in the construction of fever clinic, hospital infection management, and patient care quality improvement.

2. Information and methods

2.1. General information

Fever clinic, as a crucial part of medical institutions, its staff structure and hardware facilities are designed to ensure the continuity, efficiency and safety of medical services. The following is a detailed description of its refined management model, aiming to show its key role in improving the quality of medical services, patient satisfaction, and the prevention and control of infectious diseases. In terms of staffing, the leadership of the fever clinic consists of an experienced director, a capable deputy director and a professional nurse manager. They not only possess in-depth professional knowledge, but also have high coordination and guidance skills at the management level to ensure the orderly operation of the whole team. The team consists of three specialist attending physicians with professional background, three skilled general practitioners and nine highly trained nurses, who together form the core medical force of the Fever Clinic and are committed to providing patients with high standard and quality medical services.

In order to ensure the cleanliness of the medical environment and the timely supply of materials, the Fever Clinic is specially equipped with full-time cleaning staff and delivery staff, whose work is crucial to maintaining the daily operation of the clinic. In terms of hardware facilities, the Fever Clinic is equipped with state-of-the-art medical equipment, including one resuscitation bed, three observation beds, six observation beds and two separate

consultation rooms. These facilities are designed with full consideration of patients' medical needs and can provide appropriate observation and treatment conditions for patients with different conditions. Resuscitation beds ensure rapid treatment in emergency situations, observation beds and beds provide continuous monitoring and treatment for patients, and the separate consultation rooms greatly enhance patient privacy and experience.

The establishment and efficient operation of the Fever Clinic not only significantly improves the quality of healthcare services and patient satisfaction, but also plays an irreplaceable role in infectious disease screening, early diagnosis and hospital infection control. Its core responsibilities include strictly adhering to the guidance and supervision of the CDC organisations and following through with disease prevention and control tasks. This covers hospital-wide professional diagnosis and treatment and isolation and observation of febrile patients, patients with intestinal diseases, patients with surgical special infections and patients with suspected infectious diseases. In the handling of public health events, the Fever Clinic plays a vanguard role, and is able to respond quickly and effectively control the spread of infectious diseases to protect the health and safety of patients and healthcare workers. At the same time, the fever clinic maintains a close partnership with the hospital infection and disease control department to jointly develop and implement infection control measures to ensure that the risk of hospital-acquired infections is managed scientifically and effectively.

In the context of a general hospital in Zhangjiagang City, Jiangsu Province, this study aimed to compare the changes in the incidence of hospital-acquired infections in the two periods and to assess the improvement in patient satisfaction by conducting an in-depth retrospective analysis of 25 inpatients in each of the years 2006 and 2023. In addition, the study also compared the satisfaction of healthcare professionals in 13 cases in each of the two years to gain a comprehensive understanding of the effectiveness of the fever clinic in improving the quality of healthcare services and patient experience. These analyses provide a clearer picture of the important role of the fever clinic in the prevention and control of hospital-acquired infections and its positive impact on the overall improvement of the healthcare environment.

2.2. Methods

(1) In the process of building a modern medical service system, the establishment of the fever clinic, the optimisation of the departmental layout and the improvement of the management system are the key links in improving the quality of medical services and the ability to prevent and control infectious diseases. The following is a detailed description of the comprehensive construction of the fever outpatient clinic, aiming to show its scientific and professional nature in the medical process. The planning of the fever outpatient clinic takes full account of the needs of the medical process and is carefully divided into three key functional areas to ensure the efficiency of medical operations and patient safety [2].

The design of the reception area reflects the importance placed on the patient experience. The area includes a convenient entrance, an efficient registration desk, a professional triage desk, a spacious and comfortable waiting hall, a consultation room with good privacy, a standardized blood collection room, a fully functional dispensing room, a well-equipped infusion room and an emergency resuscitation room. Such a layout ensures that the whole process of patients from entering the clinic to receiving treatment is smooth and convenient, fully reflecting the concept of humane medical services. The observation area is specially designed for patients who need to be isolated for observation, and independent negative pressure isolation wards have been set up. Each ward is equipped with a telephone call system so that patients can communicate with medical staff in time. At the same time, the wards are equipped with sufficient disinfection and cleaning supplies to ensure that patients receive

effective medical supervision and enjoy a safe living environment during the observation period.

Thirdly, the working area for medical and nursing staff strictly follows standardized medical management and is divided into contaminated, semi-contaminated and clean areas. This zoning design effectively reduces the risk of cross-infection and ensures the safety of healthcare workers in the performance of their duties. Within the Fever Clinic, in order to improve the efficiency of medical treatment, clear and unambiguous signage and floor markings can be seen everywhere. They provide accurate guidance for patients and staff, and help to reach the destination quickly and accurately. In addition, the department is constantly optimising its management system, which covers a wide range of aspects such as medical waste disposal, disinfection and isolation, disinfection and sterilisation, as well as environmental hygiene monitoring, to ensure standardization of medical operations and patient safety. Regular monthly inspections and scores are not only a comprehensive review of the department's operation, but also a verification of the effectiveness of the management system. By feeding back the inspection results to the relevant departments, the department is able to summarize its experience and identify deficiencies in a timely manner, and adjust and improve the management system accordingly to promote its development towards standardization and scientification.

(2) In medical institutions, improving the process of reporting infectious diseases and strengthening the management of patients with infectious diseases are key measures for the prevention and control of hospital-acquired infections. The standardization and normalisation of this process is the basis for achieving effective prevention and control. The following is an in-depth description of the process, aiming to highlight its important role in maintaining public health safety. To ensure that medical staff are proficient in the operation of the infectious disease reporting system, the hospital has adopted the measure of distributing infectious disease report cards to each consultation room one by one. The aim is to ensure that every doctor is able to complete the report card accurately and meticulously when attending to patients with infectious diseases and suspected infectious diseases, which is not only responsible for the health of patients, but also an important contribution to public health safety.

Completion of the infectious disease report card covers the patient's name, date of consultation, disease diagnosis, clinic number, names of doctors and nurses on duty, and information about the card recipient. This detailed information is a key element in tracking disease dynamics and formulating prevention and control strategies. Doctors must ensure the accuracy and completeness of the information during the completion process. After completing the report card, the hospital designates a special person in charge of promptly sending the report card to the public health department. The timeliness of this link is crucial for subsequent monitoring and analyses, and facilitates rapid response to possible public health incidents.

In addition, the hospital has established an elaborate record-keeping system which ensures that all information related to infectious diseases is properly recorded and maintained. The strict implementation of this process not only enhances the hospital's professionalism in managing infectious disease patients, but also provides solid data support for the prevention and control of hospital-acquired infections. Through these standardized and regulated measures, hospitals are able to identify and control infectious agents more effectively, thereby safeguarding the health and safety of patients and healthcare workers. At the same time, the optimisation of this process also improves the overall service quality of hospitals and enhances their ability to cope with the challenges of infectious diseases. In summary, improving the infectious disease reporting process and strengthening patient management are important components of hospital infection prevention and control, and are of far-reaching significance to the maintenance of social public health safety.

(3) In the healthcare environment, optimisation of the disinfection and isolation system and proper disposal

of medical waste are key measures for the prevention of hospital-acquired infections. The following is a detailed description of the strategies adopted by the Hospital in these two areas, with the aim of demonstrating its efforts to improve medical safety and service quality. In order to raise the awareness of and compliance with aseptic practices among healthcare workers, the Hospital has adopted a series of educational and management measures. It organises in-depth study of medical codes of conduct and operating procedures for all healthcare staff to strengthen the concept of aseptic operation. On this basis, the Hospital has established a set of strict standards for the assessment of aseptic operation techniques and has incentivised healthcare workers to pay more attention to the necessity of aseptic operation through the implementation of a system of economic rewards and penalties. This institutionalised management tool aims to ensure that healthcare workers consciously comply with the regulations related to aseptic operation in their daily work, thereby reducing the risk of hospital-acquired infections.

The staffing of the fever clinic has been carefully planned and designed. The leadership consists of an experienced director, a capable deputy director, and a highly professional nurse manager, who together are responsible for the coordination and guidance of the healthcare team. The team consists of three attending specialists, three general practitioners and nine well-trained nurses, who form the core medical strength of the Fever Clinic. In addition, specially equipped cleaning staff and delivery staff are responsible for the cleaning of the environment and the timely replenishment of supplies, respectively, providing logistical support for the efficient operation of the Fever Clinic. The establishment and continuous improvement of this professional team provides a solid human resource guarantee for the prevention and control of hospital infections. Through the strict disinfection and isolation system and aseptic operation norms, our hospital effectively maintains the safety of the working environment for healthcare workers while safeguarding the health of patients and improving the quality of medical services.

(4) In fever clinics, the proper use of personal protective equipment (PPE) is essential for healthcare workers to prevent hospital-acquired infections. Healthcare workers need to choose the appropriate masks, such as N95 masks or medical surgical masks, according to the type of patients they are exposed to and the risk of operations, and ensure that the masks cover the nose, mouth and chin without gaps, and are replaced as soon as they become wet or contaminated. Wear appropriately sized gloves when coming into contact with patient's blood, body fluids, secretions or performing invasive procedures and replace gloves as soon as they are torn or contaminated, followed by hand hygiene. During operations that may produce splashing or spraying, such as blood sampling, tracheal intubation, etc., healthcare workers should wear goggles or face masks and ensure clear vision, and clean and sterilise them as required after use. When handling patients with highly contagious diseases or operations with risk of splashing, protective clothing covering the head, neck and feet should be worn and put on and taken off correctly in designated areas.

To ensure the effective use of PPE, the hospital organises regular theoretical training covering types of PPE, their uses, donning and doffing methods, etc., emphasising their importance in the prevention of hospital-acquired infections. Practical exercises allow healthcare workers to practice donning and doffing PPE through simulated work scenarios, with instructors immediately correcting errors and providing correct demonstrations. The skills of healthcare workers in using PPE are assessed through tests to ensure that everyone is able to operate it correctly and skilfully. In addition, the hospital regularly updates the guidelines and standard operating procedures for the use of PPE, and encourages healthcare workers to participate in continuing education courses in order to acquire the latest knowledge of protection and improve self-protection.

(5) In fever clinics, careful management of patients, especially those with suspected or confirmed

infectious diseases, is essential for effective prevention and control of hospital-acquired infections. This involves immediately directing patients to clearly labelled isolation areas, ensuring that they are effectively segregated from other patients and visitors, and requiring healthcare workers to wear full personal protective equipment and strictly follow protocols for entering and exiting isolation areas. For highly infectious diseases such as TB, SARS, MERS or COVID-19, patients will be treated in isolation in single rooms equipped with the necessary medical equipment and amenities to minimise contact with others. In addition, for diseases with different modes of transmission, such as airborne, droplet and contact transmission, appropriate isolation measures, such as air filtration, maintaining social distance and the use of masks, as well as cleansing and disinfection of objects touched by the patients, are adopted.

At the same time, health education for patients is an indispensable part. Patients should be educated about the disease, including the condition, the means of transmission, the importance of isolation and treatment as well as possible complications, and be provided with relevant publicity materials. Educate patients on basic protective measures such as how to properly wear masks, perform hand hygiene and avoid close contact, as well as the use of tissues or elbows to cover their mouths and noses when coughing or sneezing, so as to minimise the spread of pathogens. In addition, psychological support and counselling are provided to help patients cope with the anxiety and loneliness that may be associated with isolation treatment. Through good doctor-patient communication, it is ensured that patients are aware of the treatment process and prognosis, so as to enhance their confidence in treatment. In terms of life guidance, patients are instructed on how to maintain good personal hygiene habits during isolation and are provided with the necessary daily necessities to ensure their quality of life.

In conclusion, through this series of comprehensive measures, the fever clinic not only effectively reduces the risk of hospital-acquired infections, but also enhances patients' awareness of self-protection and treatment compliance, creating favourable conditions for patients' recovery.

(6) At the fever clinic, maintaining respiratory hygiene is essential in order to effectively prevent the spread of respiratory diseases. A series of measures have been taken to educate patients and health care workers on the proper handling of coughing and sneezing behaviour, and to ensure an adequate supply and proper use of medical waste containers. Specifically, it is taught that when coughing or sneezing, tissues should be used to cover the mouth and nose in preference to the inside of the elbow if tissues are not available to avoid direct covering with the hands, thereby reducing the spread of pathogens in droplets to others. Used tissues must be discarded immediately and followed by hand hygiene to maintain personal and environmental cleanliness. Live demonstrations and interactive exercises are used to ensure that these correct coughing and sneezing postures are fully understood and performed by patients and healthcare workers. At the same time, easily identifiable containers clearly labelled as 'clinical waste' were placed in key areas of the fever clinic, including waiting areas, examination rooms, treatment rooms and wards, to collect potential contaminants such as used tissues, masks, etc. It was emphasised that these wastes should not be thrown away. It is emphasised that these wastes should not be disposed of in ordinary rubbish bins to prevent the spread of pathogens. In addition, medical waste containers are regularly checked for overflow and replaced in a timely manner in accordance with hospital regulations to ensure that all medical waste is disposed of safely and correctly in accordance with national and local regulatory requirements. These comprehensive measures help reduce the risk of respiratory disease transmission and safeguard the safety of patients and healthcare workers, and are an important part of respiratory hygiene management in fever clinics.

The following is a detailed report on the specific practice and effectiveness of the fever clinic in a general hospital in Zhangjiagang City, Jiangsu Province, in reducing the incidence of hospital-acquired infections and

improving the satisfaction of patients and healthcare workers since its establishment [3]. Through this series of efforts, not only has the safety and quality of medical services been significantly improved, but also a safer and more reliable medical environment has been created for patients.

2.3. Statistical methods

In this study, the collected data were rigorously processed and analysed, and this process was completed using SPSS 13.0 statistical software. In order to explore whether the differences in rates between different groups were statistically significant, the statistical method of χ^2 test (Chi-square test) was used. During the analysis, a P value of less than 0.05 was used as the criterion for determination, i.e., when $P < 0.05$, the observed differences were considered statistically significant and thus of practical clinical significance. The use of this methodology ensures that the results of the study are both accurate and reliable, as well as providing strong data support for clinical practice.

3. Results

Table 1 aims to compare and analyse the changes in the incidence of hospital-acquired infections, patient satisfaction, and healthcare staff satisfaction after the establishment of the fever clinic (FY2023) with the previous year (FY2005). The following is a detailed comparison of the KPIs of the two years and the results of their statistical analyses.

In FY2023, after the establishment of our fever clinic, the incidence of hospital-acquired infections decreased significantly to 9.0%, which was a substantial reduction from 37.0% in FY2005. At the same time, patient satisfaction increased significantly from 73.0% in FY2005 to 97.0%, reflecting a significant increase in patient recognition of the quality of healthcare services. Similarly, the satisfaction of healthcare workers also increased from 70% in 2005 to 93%, indicating that healthcare workers' satisfaction with the working environment and professional identity have increased significantly. Statistical analysis of the data from both years showed that these improvements were statistically significant ($p<0.05$). This finding strongly suggests that significant improvements in quality of care, patient experience, and healthcare worker job satisfaction were achieved in FY2023 compared to FY2005.

These data comparisons not only reveal the positive impact of the establishment of the fever clinic on the hospital's performance indicators, but also reflect the significant achievements of the hospital in terms of infection control strategies, service quality improvement and enhanced staff satisfaction. This shows that the establishment and improvement of the fever clinic plays an important role in enhancing the overall operation and service quality of the healthcare organisation, and lays a solid foundation for the long-term development of the hospital. In addition, these achievements further validate the effectiveness of the hospital's efforts in implementing infection control measures, optimising service processes and improving staff training.

Table 1. Comparative analysis of hospital infection incidence rate, patient satisfaction and healthcare staff satisfaction before and after the establishment of fever clinic (%)

Time	Incidence of hospital-acquired infections	Patient satisfaction	Doctor satisfaction
2023	9.0(3/26)[a]	97(25/26)[a]	93(13/14)[a]
2006	37(10/26)	73(19/26)	70(10/14)

Note: a: $P < 0.05$ compared with 2005

4. Discussion

In today's complex and changing healthcare environment, the prevention and control of hospital-acquired infections has become an important challenge for healthcare organisations. As the problem of hospital-acquired infections becomes more and more prominent, it is particularly urgent to explore and implement a series of innovative and effective prevention and control strategies. In this series of strategies, the establishment and improvement of fever clinic undoubtedly occupies a pivotal position, especially in the primary health care institutions, its role is not to be underestimated, has become a key link in the prevention and control of hospital-acquired infections. Since the establishment of the Fever Clinic in our hospital, we have always been patient-centred, and we have continuously summed up our practical experience and actively drawn on our professional knowledge in order to cope with the numerous guidance, inspections and supervision by the CDC. Our Fever Clinic is committed to providing comprehensive and professional medical treatment and care services to patients with infectious diseases, suspected infectious diseases and fever. Through this series of unremitting efforts, we have successfully reduced the incidence of hospital-acquired infections, while significantly improving the satisfaction of patients and healthcare workers with the quality of healthcare services [4–8]. These achievements not only reflect a strong commitment to patient health and safety, but also demonstrate the hospital's professional competence and management in the field of infection control. The establishment and improvement of the fever clinic has proven to be an important step in improving the overall quality of hospital services and protecting patients' health.

A comparative study of the incidence of hospital infections between FY2005 and FY2023 reveals a significant reduction in the incidence of hospital infections and a significant increase in the satisfaction of patients and healthcare workers with healthcare services, with all these improvements reaching a statistically significant level. This research result fully demonstrates that continuous optimisation of the management system and summarisation of clinical experiences and lessons learnt have a crucial positive effect on improving the quality of healthcare, alleviating patients' illnesses as well as increasing satisfaction. This study not only reveals the key role of fever clinics in reducing the incidence of hospital-acquired infections, but also emphasises that the overall level of healthcare services can be effectively enhanced through the continuous improvement of management systems and clinical practices [9–10]. These results provide strong data support for the prevention and control of hospital-acquired infections and provide valuable references and lessons for other healthcare organisations to improve in similar areas.

The experience of our hospital shows that with scientific analyses and continuous efforts, we are fully capable of improving the quality of hospital services, protecting the health rights of patients, and at the same time increasing the job satisfaction of healthcare workers. In the future, we will continue to deepen the construction of the fever clinic, actively explore more effective hospital infection prevention and control strategies, and contribute to building a safe and efficient healthcare environment.

Disclosure statement

The authors declare no conflict of interest.

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